Human Performance

Human Factors: Basic Concepts:

Human factors in aviation
Accident Statistics
Flight Safety Concepts

Basic aviation physiology and health maintenance:

Basic of flight physiology
Man and Environment
Health and hygiene

Basic Aviation Psychology:

Human Information Processing
Human error and reliability
Decision making
Avoiding and managing errors cockpit management
Personality
Human overload and underload
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Human Factors: Basic Concepts:
Human factors in aviation:

1. Having consumed a small amount of alcohol, the prudent pilot will not fly for a minimum of ... hours
A) 8
B) 12
C) 36
D) 24

Between which components is an interface mismatch causing disturbance of the biological rhythm, thus leading to reduced human performance?
A) Liveware - Hardware.
B) Liveware - Software.
C) Liveware - Environment.
D) Liveware - Liveware.

Where can you find medical fitness requirements for pilots?
A) JAR-OPS.
B) JAR-NPA.
C) FAR PART 61.
D) JAR-FCL.

A flight crew licence holder has completed a two-day stay at a hospital. What must he/she do before flying as a crewmember?
A) Wait until his/her common sense says that he/she is fit for flight.
B) Inform the authority in writing.
C) Seek advice of the authority or AME.
D) Not fly before he/she is released by an AME.

Oxygen is transported through the walls of the alveoli according to:
A) Henrys law.
B) the Diffusion law.
C) Boyles law.
D) Daltons law.

Between which components is an interface mismatch causing an error of interpretation by using an old three- point altimeter?
A) Liveware - Environment
B) Liveware - Liveware
C) Liveware - Hardware
D) Liveware - Software

A pilot is skilled when he:

1. trains or practises regularly
2. knows how to manage himself/herself
3. possesses all the knowledge associated with his aircraft
4. knows how to keep resources in reserve for coping with the unexpected

A) 1,2,3,4
B) 1,2,4
C) 1,2
D) 2, 3,4

The measurements used by Anthropometry are:
A) stationary, dynamic and curvature
B) static, dynamic and contour
C) static, dynamic and curvature
D) stoic, dynamic and contour

Up to what altitude will generally healthy people be able to stay without showing any signs of suffering from hypoxia?
A) Up to 3.000 feet
B) Up to 18.000 feet
C) Up to 21.000 feet
D) Up to 10-12.000 feet

Anthropometry is the study of:
A) human limitations.
B) human working conditions.
C) human measurement.
D) human workspace.

The volume percentage of oxygen in the atmosphere is 21% which:
A) increases with increasing altitude.
B) decreases with increasing altitude.
C) is constant for all altitudes conventional airplanes can reach.
D) is dependent on the present air pressure.

The percentage of oxygen in the air at an altitude of approximately 34.000 ft is:
A) 42%
B) 10,5%
C) 5%
D) 21%

Thinking on human reliability is changing.
A) Human errors can be avoided. All it takes is to be vigilant and to extend ones knowledge
B) Human errors are now considered as being inherent to the cognitive function of human and are generally inescapable
C) The individual view of safety has gradually replaced the systemic view of safety
D) It is thought that it will be possible to eliminate errors in the near future

Accident Statistics:

The phase of flight most prone to accidents is:
A) landing.
B) intermediate and final approach.
C) descent.
D) take-off.

The most common specific cause of pilot-induced accidents is:
A) poor pre-flight planning.
B) not maintaining ground clearance.
C) airspeed not maintained.
D) loss of directional control.

As a cause of accidents, the human factor:
A) which is cited in current statistics, applies to the flight crew and ATC only.
B) is cited in approximately 70 - 80 % of aviation accidents.
C) plays a negligible role in commercial aviation accidents. It is much more important in general aviation.
D) has increased considerably since 1980 - the percentage of accident in which this factor has been involved has more than tripled since this date.

The term pilot error constitute a certain relative amount of main causes in air accidents. Which of the following is correct?
A) Around 50 %
B) Around 70%
C) Around 20 %
D) Around 95%

The errors resulting from an irrational indexing system in an operations manual are related to an interface mismatch between:
A) Liveware - Hardware.
B) Liveware - Software.
C) Liveware - Liveware.
D) Liveware - Environment.

The rate of accidents in commercial aviation (excluding sabotage and acts of terrorism):
A) is a long way short of the safety level of road transport.
B) is approximately 1 accident per million airport movements.
C) has improved considerably over the last fifteen years.
D) represents about fifty accidents around the world every year.

Analysis of accidents involving the human factor in aviation shows that:
A) failure of the human factor is always connected with technical breakdowns
B) only pilot training will make it possible to improve the situation
C) there is hardly ever a single cause responsible
D) only front-line operators are involved

Vibrations can cause blurred vision. This is due to tuned resonance oscillations of the:
A) photosensitive cells.
B) optic nerve.
C) crystalline lens.
D) eyeballs.

Flight Safety Concepts:

All cockpit lights should:
A) contain 2 bulbs
B) have a minimum of 3 power sources
C) be covered with non-reflective plastic
D) avoid harsh shadows and reflected glare

The main preoccupation in modern airline operations should be:
A) efficient utilisation of resources.
B) maximum utilisation of resources.
C) profit.
D) safety.

As a result of automation in cockpits:
A) it is easier for the captain to monitor the work of the first officer and vice versa.
B) communication and coordination have clearly improved in man-man and man-machine relations.
C) communication and coordination call for an even greater effort on the part of the crew members.
D) the need for communication between crew members has been decreased.

Among the advantages of automation is:
A) computers are quicker to read
B) decrease in the size of cockpits
C) crew become less important and therefore crew numbers can be decreased
D) increase of situational awareness

What does the H in the SHELL model mean?
A) Hardware.
B) Human.
C) Health.
D) Harley-Davidson.

Normally the design of aircraft uses measurements taken from:
A) the entire population.
B) the entire population disregarding the 5% lowest.
C) the entire population disregarding both the 5% lowest and the 5% highest.
D) the entire population disregarding the 5% highest.

The most important requirement in the design of both displays and controls is:
A) accessibility
B) standardisation
C) ease of utilisation
D) positioning

In the initial phase of flight training the relationship between confidence and expertise can be described as:

A) the pilot has a sphere of expertise which is reduced to daily use of his skills
B) the pilot is competent enough to fly the aircraft at this stage, but does neither have a great deal of confidence in his/her abilities nor in the whole system
C) the pilot is sufficiently competent to fly and knows at this stage what he can and cannot do
D) during this learning stage, the pilot is very near to achieving full potential knowledge of the machine

Between which components is an interface mismatch responsible for deficiencies in conceptual aspects of warning systems?

A) Liveware - Software.
B) Liveware - Environment.
C) Liveware - Liveware.
D) Liveware - Hardware.

The elements of the SHEL model are:

A) Software, hardware, environment and liveware.
B) Shareware, hardware, environment and limitations.
C) Software, hardware, electronics and liveware.
D) Shareware, hardware, education and limitations.

The twin objectives of Human Performance are:

A) physical fitness and good decision-making.
B) the safety and efficiency of the operation and the well-being of the individual.
C) flight Safety and self-awareness.
D) knowledge of the limitations of the body and their significance in aviation.

Which is true regarding the interaction between various elements of the SHEL model?

A) Proficiency testing should be done on an individual basis to avoid SHEL element mismatch.
B) Temperature, pressure, humidity, noise and time of day can all be reflected in performance and also in well being.
C) The liveware is the hub of the SHEL model; therefore the non-human components should be adapted and matched to this central component.
D) Information processing can be stimulated by mind sets and vigilance.

CRM and LOFT training are designed to improve:

A) the quality of crew performance.
B) individual achievement.
C) individual performance in adverse conditions.
D) the quality and a number of individuals performance.

What is the meaning of the S in the SHELL model?

A) Safety
B) Signals and indications
C) Software
D) Symbols

With regard to the level of automation of behaviours in the attention mechanism, we know that:

A) the more behaviour is automated, the less it requires conscious attention and thus the more it frees mental resources.
B) the less behaviour is automated, the less it requires attention and the more it frees resources.
C) the more behaviour is automated, the more it requires attention and the less it frees resources.
D) the more behaviour is automated, the more it requires attention and the more it frees resources.

Basic aviation physiology and health maintenance:

Basic of flight physiology:

The ozone layer:
A) absorbs UV radiation up to a wavelength of 400 nm completely.
B) Absorbs UVB better than UVA.
C) absorbs high energy UV radiation less than low energy UV radiation.
D) absorbs UVA better than UVB.

The effect of hypoxia to vision:
A) can only be detected when smoking tobacco.
B) does not depend on the level of illumination.
C) is stronger with the rods.
D) is usual stronger with the cones.

TUC following loss of pressurisation at 35.000 ft is:
A) 5 minutes upwards.
B) 10 - 15 seconds.
C) 3 - 4 minutes.
D) 30 - 60 seconds.

How much of our knowledge is acquired through sight?
A) 65%.
B) 75%.
C) 90%.
D) 85%.

The pressure at 18 000 ft is lower than at sea level. How much lower is it approximately?
A) 1/3.
B) 75% of the pressure at sea level.
C) 1/2.
D) 1/4.

With hyperventilation, caused by high levels of arousal or overstress:
A) more oxygen will reach the brain.
B) peripheral and scotopic vision will be improved.
C) finger nails and lips will turn blue (cyanosis).
D) an increased amount of carbon dioxide is exhaled causing muscular spasms and even unconsciousness.

Which component(s) is/are transporting the oxygen in the blood?
A) White blood cells.
B) Plasma.
C) Blood fat.
D) Haemoglobin in the red blood cells.

100% oxygen without pressure can be used up to:
A) 50.000 ft
B) 40.000 ft
C) 70.000 ft
D) 60.000 ft

The normal rate of breathing is:
A) 20 to 30 cycles a minute
B) 12 to 16 cycles a minute.
C) 32 to 40 cycles a minute.
D) 60 ti 100 cycles a minute

When the pressoreceptors signal a lowering of the blood-pressure there are adaptation mechanisms which result in:

1. an increase of respiratory activity
2. the arterioles to constrict
3. an increase of cardiac output
4. the heart rate to rise

A) 1,3 and 4 are correct, 2 is false
B) 1,2 and 4 are correct, 3 is false
C) 1,2 and 3 are correct, 4 is false
D) 2,3 and 4 are correct, 1 is false

The time between inadequate oxygen supply and incapacitation is called TUC (Time of Useful Consciousness).
It
A) is not dependent on physical or psychological pressure.
B) varies individually and does not depend on altitude.{{Const143}}
C) varies individually and depends on cabin pressure altitude.
D) is the same amount of time for every person.

Linear acceleration can give a false impression of a:
A) spin.
B) descent.
C) climb.
D) turn.

The amount of oxygen in the atmosphere remains the same up to an approximate height of:
A) 20,000 ft
B) 10,000 ft
C) 40,000 ft
D) 70,000 ft

A symptom comparison for hypoxia and hyperventilation is:

A) symptoms caused by hyperventilation will immediately vanish when 100% oxygen is given.
B) there are great differences between the two.
C) altitude hypoxia is very unlikely at cabin pressure altitudes above 10.000 ft.
D) cyanosis (blue colour of finger-nail and lips) exists only in hypoxia.

After a rapid decompression at an altitude of 30 000 ft the first action of the pilot shall be:

A) informing ATC.
B) preventing panic of the passengers.
C) informing the cabin crew.
D) maintaining aircraft control and preventing hypoxia (use of oxygen mask).

The following statement is true:

A) increased carbon dioxide causes shortness of breath.
B) decreased oxygen causes shortness of breath.
C) increased oxygen causes shortness of breath.
D) increased carbon dioxide remains unnoticed.

What is the major factor in the general population which predisposes an individual to heart attack?

A) High blood pressure.
B) The amount of saturated fats in the diet.
C) Smoking.
D) Family history.

Galactic Radiation is:

A) unsteady and reasonably predictable.
B) unsteady and unpredictable.
C) steady but unpredictable.
D) steady and reasonably predictable.

The following statements are true except:

A) poor circulation is called hypoxic hypoxia.
B) inability of the tissue to use oxygen is called histotoxic hypoxia.
C) reduced oxygen carrying capacity is called hypemic hypoxia.
D) reduced alveolar oxygen exchange is called hypoxic hypoxia.

When consciously breathing fast or hyperventilating due to high arousal or overstress, the carbon dioxide level in the blood is lowered, resulting in:

A) a delay in the onset of hypoxia when flying at high altitudes.
B) a poor saturation of oxygen in the blood.
C) the activation of the respiratory centre, which in turn causes hypoxia.
D) less oxygen to be diffused into the cells.

21. Decompression symptoms are caused by:

A) dissolved gases from tissues and fluids of the body.
B) release of locked gases from joints.
C) low carbon dioxide pressure of inhaled air.
D) low oxygen pressure of inhaled air.

Which symptom of hypoxia is the most dangerous for conducting safe flight?

A) Lack of adaptation.
B) Lack of adaptation.
C) Dizziness.
D) The interference of reasoning and perceptive functions.

The partial pressure of the respiratory gases within the pulmonary alveoli is

A) 5 mmHg pCO2, 10 mmHg pH2O, 150 mmHg O2
B) 40 mmHg pCO2, 47 mmHg pH2O, 100 mmHg O2
C) 47 mmHg pH2O, 150 mmHg O2, 0.03 mmHg pCO2
D) 46 mmHg pCO2, 47 mmHg pH2O, 40 mmHg O2

Hypoxia is the result of:

A) High barometric pressure at higher altitudes.
B) Excessive nitrogen in the bloodstream.
C) Decreasing amount of oxygen as your altitude increases.
D) Both A and B are correct.

A balloon is often used to illustrate the effects of which gas law?

A) Charles law.
B) Daltons law.
C) Henrys law.
D) Boyles law.

Daltons law explains the occurrence of:

A) decompression sickness.
B) altitude hypoxia.
C) creeps.
D) bends.

A smoker of 20 cigarettes a day at height will suffer from Anaemic Hypoxia and will have a raised carboxy- haemoglobin level of about 7%. He/she will start to suffer from Hypoxia approximately 4 - 5,000 ft below that of a non-smoker.

A) False.
B) Partly true.
C) Smoking has no effect on Hypoxia.
D) True.

Of the following alternatives, which objective effects are due to positive acceleration (+ Gz)?

1. Decrease in heart rate
2. Pooling of blood into lower parts of the body
3. Drop in blood pressure above heart-level
4. Downward displacement or deformation of soft or mobile organs

A) 2,3,4
B) 1,2,3
C) 1,3,4
D) 1

Hypoxia can occur because:

A) the percentage of oxygen is lower at altitude.
B) you are getting too much solar radiation.
C) arterial oxygen pressure is normal, but total oxygen content of the blood is reduced
D) you inhale too much nitrogen.

The natural free run of the circadian rhythm of the human body is:

A) 26 hours
B) 24 hours
C) 25hours
D) 48 hours

A healthy young subject should have the following lung volumes

A) an inspiratory reserve volume of ~0.5 litre
B) a residual volume of 1.2 litre
C) a vital capacity of ~7.0 litre
D) an expiratory reserve volume of ~0.5 litre

Having given blood a pilot should see a doctor because of the increased susceptibility to:

A) low blood pressure.
B) glaucoma.
C) hypoxia.
D) hyperventilation.

Hypoxia can also be caused by:

A) a lack of red blood cells in the blood or decreased ability of the hemoglobin to transport oxygen.
B) too much carbon dioxide in the blood.
C) increasing oxygen partial pressure used for the exchange of gases.
D) a lack of nitrogen in ambient air.

Haemoglobin is:

A) in the white blood cells.
B) in the platelets.
C) in the red blood cells.
D) dissolved in the plasma.

What is the Time of Useful Consciousness for a rapid decompression at 25.000 ft?

A) Between 3 and 5 minutes depending on the physical activities of the subjected pilot.
B) Between 25 seconds and 1 minute 30 seconds.
C) About 30 seconds.
D) About 18 seconds.

Dry air is a mixture of gases. Their volume percentage is about:

A) 18% oxygen, 80% nitrogen, 2% other gases.
B) 25% oxygen, 74% nitrogen, 1% other gases.
C) 19% oxygen, 80% nitrogen, 1% other gases.
D) 21% oxygen,78% nitrogen, 1% other gases.

What is heart infarct?

A) A heart infarct is a blockage of the coronary artery; it will seldom lead to a heart attack.
B) A heart infarct is the same as a heart attack.
C) A heart infarct is a blockage of the coronary artery; it will almost always lead to a heart attack.
D) A heart infarct is a blockage of the coronary vein.

The approximate percentage of oxygen in the atmosphere at 30.000 ft is:

A) 28%
B) 5%
C) 10%
D) 20%

The following statement about ozone is false:

A) ozone can cause lung irritation at a concentration of 1.0 ppm.
B) ozone impairs night vision.
C) during a sunny day ozone is enriched more over rural areas.
D) during a sunny day ozone is enriched more over industrial zones and urban areas.

Hypoxia effects visual performance. A pilot may:

A) have a reduction of 25% in visual acuity at 8000 FT AGL.
B) get blurred and/or tunnel vision.
C) be unable to maintain piercing vision below 5000 FT AGL.
D) get colour blindness accompanied by severe headache.

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41. Which of the following statements about hyperthermia is correct?

A) Complete adaptation to the heat in a hot country takes about a fortnight.
B) asodilation is the only regulate which is capable of reducing body temperature.
C) Performance is not impaired by an increase in body temperature to 40° C or more.
D) Evaporation is more effective when ambient humidity is high.

What is angina?

A) Angina is a symptom of reduced oxygen supply to the heart muscle, usually caused by narrowing or obstruction of lung alveoli.
B) Angina is a symptom of too high oxygen supply to the heart muscle, usually caused by enlarge coronary arteries.
C) Angina is a symptom of reduced oxygen supply to the heart muscle, usually caused by narrowing or obstruction of the coronary artery.
D) Angina is a symptom of reduced oxygen supply to the brain, usually caused by narrowing or obstruction of the coronary artery.

Some hours after a rapid decompression at FL 300 you experience pain in the joints. Which of following answers is correct?

A) You should ask for medical advice (flight surgeon) since this is a symptom of decompression sickness.
B) This symptom indicates decompression sickness and will disappear when you take some exercise.
C) This phenomenon is treated by breathing 100% nitrogen.
D) This phenomenon is treated by physiotherapy.

How much of the air is occupied by oxygen?

A) 78.0%.
B) 17%.
C) 20.94%.
D) 78.08%.

The normal visual approach angle is:

A) 10 degrees.
B) 4 degrees.
C) 2 degrees.
D) 3 degrees.

What is TUC?

A) Both A and C are correct.
B) The same as (EPT) expected performance time.
C) Total Useful Consciousness.
D) Time of Useful Consciousness.

How much of the air is occupied by nitrogen?

A) 20.94%.
B) 78.08%.
C) 76%.
D) 21%.

An increase in the amount of carbon dioxide in the blood leads to:

A) an improving resistance to hypoxia.
B) shortness of breath.
C) a decrease of acidity in the blood.
D) a reduction of red blood cells.

The most dangerous sign of hypoxic hypoxia is:

A) impaired judgment and self criticism.
B) decreased heart rate.
C) increased respiration rate.
D) bluish skin.

Oxygen, combined with haemoglobin in blood is transported by:

A) red blood cells.
B) white blood cells.
C) blood plasma.
D) platelets.

With reference to humidity:

1. 40 - 60% is optimal,
2. Cabin humidity is normally approx 30%,
3. Dehydration will affect crew performance,
4. Humidity has no effect on crew performance,

A) Only 3 is correct
B) 2 & 4 are correct
C) 1,2 and 3 are correct
D) 1 & 4 are correct

In the following list you find some symptoms for hypoxia and carbon monoxide poisoning.

A) Dull headache and bends.
B) Dizziness, hypothermia.
C) Visual disturbances, lack of concentration, euphoria.
D) Nausea and barotitis.

The purpose of the red blood cells is to:

A) Transport oxygen.
B) Clot blood.
C) Transport CO2, nutrients and hormones.
D) Fight infection.

With a pulse rate of 72 beats a minute and a stroke volume of 70 ml, what is the cardiac output?

A) 6 litres a minute.
B) 8 litres a minute.
C) 7 litres a minute.
D) 5 litres a minute.

Which of the following symptoms can indicate the beginning of hypoxia?

1. Blue lips and finger nails.
2. Euphoria.
3. Flatulence.
4. Unconsciousness.

A) 1, 2 and 4 are correct.
B) 2, 3 and 4 are correct.
C) 1, 2 and 3 are correct.
D) 1, 3 and 4 are correct.

The ozone-layer is situated in the:

A) mesosphere
B) mesosphere and troposphere.
C) troposphere.
D) stratosphere.

The purpose of cabin pressurisation system is:

A) To allow the crew and passengers to move about freely in a comfortable environment, unencumbered by oxygen masks or other life support equipment.
B) Reduce gastrointestinal-, trapped gas-, middle ear- and sinus- problems.
C) To prevent hypoxia.
D) All of the above (A,B and C are all correct).

Short-term acceleration is 1 second or less whereas long-term acceleration is over 1 seconds:

A) True.
B) False - the time is 20 seconds.
C) False - the time is 1 minute.
D) False - the time is 5 minutes.

Which of the following statements, if any, are correct?

1. Euphoria is a possible result of hypoxia
2. Euphoria can lead to degraded decisions in flight

A) 1 only.
B) 1 & 2.
C) 2 only.
D) Neither.

Equalization of pressure is limited between the middle ear and the ambient, when:

A) barotrauma exists in the sinuses.
B) the eustachian tube is blocked.
C) you breath through the mouth.
D) the nose is pinched.

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61. The primary function of the Pressoreceptors is:

A) Homeostasis.
B) Combating NIHL.
C) Thinning the blood.
D) Combating DCS.

What is decompression sickness?

A) An sickness resulting from the formation of nitrogen bubbles in bodily tissues and fluids after a cabin pressure loss at high altitude.
B) A disorder which is solely encountered below 18.000 ft.
C) A frequent disorder in commercial aviation due to the pressurisation curve of modern aircraft.
D) The formation of air bubbles in bodily tissues, with no consequences for peoples capabilities.

Cardiac output is:

A) stroke volume plus the pulse rate and is normally 5.0 - 5.5 litres a minute.
B) stroke volume minus the pulse rate and is normally 5.0 - 5.5 litres a minute.
C) stroke volume divided by the pulse rate and is normally 5.0 - 5.5 litres a minute.
D) stroke volume times the pulse rate and is normally 5.0 - 5.5 litres a minute.

Which of the following symptoms marks the beginning of hyperventilation?

A) Cyanosis.
B) Slow rate of breath
C) Feeling dizzy.
D) Slow heart beat.

What is the remedy for decompression sickness, or bends?

A) decrease the pressure on the body
B) increase the amount of oxygen
C) increase the pressure on the body
D) decrease the rate and depth of breathing

With a heart rate of 72 beats per minute and a stroke volume of 70 ml the cardiac output is about:

A) 7 liters/min.
B) 5 liters/min.
C) 6 liters/min.
D) 8 liters/min.

The chemical composition of the earths atmosphere (ICAO standard atmosphere) is:

A) 78 % nitrogen, 21 % oxygen, 0,9 % carbon dioxide, 0,03 % argon.
B) 71 % nitrogen, 28 % oxygen, 0,9 % argon, 0,03 % carbon dioxide.
C) 78 % nitrogen, 21 % oxygen, 0,9 % argon, 0,03 % carbon dioxide.
D) 78 % nitrogen, 28 % oxygen, 0,9 % carbon dioxide, 0,03 % argon.

Stages of performance decrements due to hypoxic hypoxia are:

A) critical threshold at 12.000 ft, disturbance stage above 22.000 ft.
B) disturbance threshold at 6.000 ft, critical threshold at 22.000 ft.
C) indifferent stage up to 6.000 ft, disturbance threshold at 12.000 ft.
D) reaction threshold at 6.000 ft, disturbance threshold at 22.000 ft.

A pilot can overcome hyperventilation by:

A) increasing the rate and depth of breathing to eliminate harmful carbon dioxide.
B) controlling the rate and depth of breathing, breathing into a bag or speaking with a loud voice.
C) depending on instruments.
D) the use of drugs stabilizing blood pressure.

Henrys Law explains the occurrence of:
A) diffusion.
B) decompression sickness.
C) hyperventilation.
D) hypoxia.

Hyperventilation is due to an excessive rate of breathing and can produce the following symptoms:
A) dizziness, tingling sensation in the fingers and toes, nausea and blurred vision.
B) reduced heart rate and increase in visual acuity.
C) a state of overconfidence and reduced heart rate.
D) blue finger-nails and lips.

Flying immediately after SCUBA diving involves the risk of getting:
A) stress.
B) hyperventilation.
C) decompression sickness without having a decompression.
D) hypoxia.

The following statement about respiration is true:
A) internal respiration serves for the gas exchange between environment and blood.
B) transport of carbon dioxide in the blood is made by combination with haemoglobin.
C) external respiration serves for the gas exchange between blood and tissue cells.
D) transport of oxygen in the blood is made by combination with haemoglobin.

Aerodontalgia is associated with the:
A) ears.
B) nose.
C) teeth.
D) eyes.

The temperature lapse rate:
A) Within the troposphere is ~2° C per 1.000 ft.
B) within the stratosphere is ~2° C per 1.000 ft.
C) within the troposphere is ~2° F per 1.000 ft.
D) within the mesosphere is ~2° F per 1.000 ft.

The pressoreceptors are located in:
A) the lungs.
B) the carotid and aortic arterial vessels.
C) the intestines.
D) the heart.

Where is the critical threshold at which a pilot not using oxygen reaches the critical or lethal zone? It starts at:

A) 38.000 ft
B) 25.000 ft.
C) 18.000 ft.
D) 21.000 ft.

Gases of physiological importance to man are:

A) oxygen, nitrogen and water vapour.
B) nitrogen and carbon dioxide.
C) oxygen and carbon dioxide.
D) oxygen and carbon monoxide.

To maintain sea level conditions at 25.000 ft, the percentage of oxygen breathing is:

A) 62%
B) 21%
C) 40%
D) 100%

What is the procedure above 10.000 ft altitude when faced with explosive decompression:

A) Check the cabin altitude, don an oxygen mask and maintain level flight.
B) Don an oxygen mask and descend to below 10.000 ft.
C) First inform ATC.
D) Descend to below 10.000 ft and signal an emergency.

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81. When suffering from Hypoxic Hypoxia, short-term memory impairment starts at approximately:

A) 16,000 ft
B) 14,000 ft
C) 12,000 ft
D) 10,000 ft

During flight all crewmembers have one or more of the following symptoms:

1. blue lips
2. mental disturbances
3. tingling sensations in arms and/or legs
4. reduction of peripheral vision Which is the possible cause?

A) Hypothermia.
B) Glaucoma.
C) Hypoglycaemia.
D) Hypoxia.

Why is hypoxia especially dangerous for pilots flying solo:

A) Hypoxia improves vision at night, so the pilot will have no indication of danger.
B) The pilot may loose control when he is using the oxygen mask.
C) Hypoxia does not cause a loss of control in steering the plane.
D) Since the first signs of hypoxia are generally hard to detect (hypoxia of the brain), the solo pilot may not be able to react in time (i.e. activate his emergency oxygen system).

The blood-pressure depends on:

1. the work of the heart
2. the peripheral resistance
3. the elasticity of the arterial walls
4. the blood volume and viscosity

A) 2, 3 and 4 are correct, 1 is false.
B) 1, 3 and 4 are correct, 2 is false.
C) 1, 2, 3 and 4 are correct.
D) 1, 2 and 3 are correct, 4 is false.

On ascent the gases in the digestive tract will:

A) contract.
B) not possible to say - depends on rate of ascent.
C) expand.
D) not be affected.

Decompression sickness may occur as from:

1. an altitude of more than 18.000 ft
2. an altitude of more than 5.500 ft
3. a rate of climb of more than 500 ft/min exceeding 18.000 ft
4. a temperature of more than 24° C

A) 2, 3
B) 2, 4
C) 1, 3, 4
D) 1, 3

Air at an altitude of 18.000 feet contains, approximately:

A) 10% oxygen.
B) 15% oxygen.
C) 5% oxygen.
D) 21% oxygen.

Smoking reduces the bloods ability to carry oxygen because:

A) CO gets trapped in the alveoli and restricts internal respiration.
B) haemoglobin has a greater affinity for CO.
C) CO5 takes a larger lung volume.
D) the inspiratory tract becomes obstructed.

The following statement about relative humidity is false:

A) if an air mass is cooled its relative humidity increases.
B) man feel comfortable at a relative humidity of 60 ... 70%
C) if an air mass is warmed, its relative humidity increases.
D) during a long haul flight, relative humidity in the cockpit is very low.

The earths atmosphere consists of different gases in various concentration. Match the following:

1. nitrogen A 0,03%
2. oxygen B 0,92%
3. carbon dioxide C 20.95%
4. rare gas D 78,10%

A) 1C, 2B, 3A, 4D
B) 1D, 2C, 3B, 4A
C) 1D, 2C, 3A, 4B
D) 1B, 2A, 3D, 4C

If someone hyperventilates due to stress his blood will get:

A) more saturated with carbon dioxide.
B) more acid.
C) less saturated with oxygen.
D) more alkaline.

A balloon with 10 litres of air is brought from mean sea level up to 34.000 feet. What is the volume of the balloon at this altitude, provided the temperature is kept constant?

A) 10 litres
B) 2.5 litres
C) 40 litres
D) 50 litres

Which part of the ear could be affected due to air pressure changes during climb and/or descent?

A) The cochlea.
B) The semicircular canals.
C) The sacculus and utriculus.
D) The Eustachian tube and the tympanic membrane (ear drum).

The atmospheric pressure at 18.000 feet altitude is half the atmospheric pressure at sea level. In accordance with this statement,

A) the oxygen saturation of the blood at that altitude will drop by 50 % too
B) the partial oxygen pressure at that altitude will also drop to 1/2 of the pressure of oxygen at sea level
C) the partial oxygen pressure at that altitude will be doubled
D) the oxygen percentage of the air at that altitude will drop by one half also.

To overcome the symptoms of hyperventilation, a pilot should:

A) Use 100% oxygen.
B) Swallow or yawn.
C) Slow the breathing rate.
D) Increase the breathing rate.

A human breathing 100% oxygen at 33,700 ft. is equivalent of breathing air at:

A) 8,000 ft
B) Sea Level
C) 21,300 ft
D) 10,000 ft

The altitudes in the Standard atmosphere that pressure will be 1/4, 1/2 and 3/4 of MSL pressure is approximately:

A) 5,000, 10,000 20,000 ft
B) 36,000, 18,000 8,000 ft
C) 20,000, 10,000 5,000 ft
D) 8,000, 18,000 36,000 ft

The Systolic blood pressure is higher than Diastolic pressure and the normal reading for a healthy person is 120/80. Hypertension can lead to strokes.

A) Is false as the Diastolic pressure is normally higher than the Systolic pressure.
B) True.
C) Is false because high blood pressure normally leads to heart attacks.
D) Is false as the normal blood pressure is 180/90.

The heart muscle is supplied with blood from:

A) the auricles.
B) the pulmonary veins.
C) the coronary arteries.
D) ventricles.

The main function of the red blood cells is:

A) the cellular defence of the organism.
B) to participate in the process of coagulation of the blood.
C) to contribute to the immune response of the organism.
D) to transport oxygen.

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101. One of the substances present in the smoke of cigarettes can make it significantly more difficult for the red blood cells to transport oxygen and as a consequence contributes to hypoxia. Which substance are we referring to:

A) Tar.
B) Carbon monoxide.
C) Carbonic anhydride.
D) Carbon dioxide.

Which of the following factors may have an influence on medical disqualification?

A) Low blood pressure only.
B) High blood pressure only.
C) Blood pressure problems cannot occur in aircrew because they always can be treated by in-flight medication.
D) High and low blood pressure as well as a poor condition of the circulatory system.

You should not dispense blood without prior information from your flight surgeon. The most important reason for this advise is:

A) you are more susceptible to hypoxia after a blood-donation.
B) the chance you get the bends is higher after blood-donation.
C) your blood-pressure is too low after blood-donation.
D) your heart frequency is too low after blood-donation.

If somebody starts breathing faster and deeper without physiological need:

A) the blood pressure in the brain will rise significantly.
B) the blood turns more acid.
C) the acid-base balance of the blood will not change.
D) the blood turns more alkaline.

The rate and depth of breathing is primarily controlled by the rate and depth of breathing is primarily controlled by:

A) the amount of nitrogen in the blood.
B) the amount of carbon dioxide in the blood.
C) the total atmospheric pressure.
D) the amount of carbon monoxide in the blood.

Grey out can be observed if a pilot is subjected to more than:

A) + 3 Gz
B) -3 Gz
C) + 3 Gy
D) + 3 Gx

The following may occur during gradual depressurisation between 12.000 and 18.000 ft:

A) a rapid decrease in blood pressure leading to considerable somnolence.
B) sudden visual hyperacuity associated with headache.
C) a loss of coordination associated with fatigue and headache.
D) a rapid decrease in blood pressure which will lead to headache and also to a loss of coordination.

Fatigue and permanent concentration:

A) increase the tolerance to hypoxia.
B) will increase the tolerance to hypoxia when flying below 15.000 feet.
C) do not affect hypoxia at all.
D) lower the tolerance to hypoxia.

Physiological problems due to increasing altitude are caused by:

A) disorientation
B) increased atmospherical pressure
C) decreased atmospherical pressure
D) accelerations

You are crossing the Alps in a non-pressurised aircraft at an altitude of 15.000 feet. You do not use the oxygen mask because you feel fine. This is unsafe, because:

A) the blood-pressure can get too high.
B) your judgement could be impaired.
C) you will get the bends.
D) the blood-pressure can get too low.

The momentum of gas exchange in respiration is:

A) independent from the partial pressures of the participating gases.
B) dependent on the pressure gradient between the participating gases during respiration.
C) the excess pressure caused by inhaling.
D) depending on the active transportation of nitrogen into the alveoli.

The Bends as a symptom of decompression sickness consists of:

A) CNS-disturbances.
B) pain in the thorax and a backing cough.
C) pain in the joints.
D) loss of peripheral vision.

Haemoglobin is manufactured mainly in the:

A) bone Marrow.
B) liver.
C) capillaries.
D) heart.

The cabin pressure in airline operation is:

A) normally not exceeding 6.000 to 8.000 feet.
B) always equivalent to sea level.
C) normally not exceeding 4.000 to 5.000 feet
D) normally not exceeding 2.000 to 3.000 feet.

When oxygen is being transferred from the blood into the tissues and carbon dioxide from the body cells into the blood, it is called:

A) internal respiration.
B) external respiration.
C) ventilation.
D) hyperventilation.

The problems of hyperventilation are caused by:

A) decreased exhaling of carbon dioxide.
B) decreased inhaling of oxygen.
C) increased inhaling of oxygen.
D) increased exhaling of carbon dioxide.

Among the symptoms of hypoxia are:

1. Impaired judgement and euphoria.
2. Fast and heavy breathing.
3. Impairment of vision.
4. Muscular impairment.

A) 1, 2 and 4
B) 1, 3 and 4
C) 1, 2, 3 and 4
D) 1 & 3

The law that states Providing the temperature is constant, the volume of gas is inversely proportional to its pressure is:

A) Boyles Law.
B) Henrys Law.
C) The Combined Gas Law.
D) Daltons Law.

A pressurized cabin helps to prevent:

1. decompression sickness
2. the problem of expansion of gases in the intestines
3. hypoxia
4. coronary disease

A) 1,2 and 4 are correct.
B) 2, 3 and 4 are correct.
C) 1, 2 and 3 are correct.
D) 1, 3 and 4 are correct.

How does CO affect O2 carriage in the blood?

A) By killing white blood cells.
B) By splitting the O2 into CO2
C) By killing red blood cells.
D) By binding to the haemoglobin before O2 does.

---

121. The Effective Performance Time or Time of Useful Consciousness after a decompression at 35.000 ft is:

A) approximately 5 minutes.
B) approximately 3 minutes.
C) less than 20 seconds.
D) between 30 and 60 seconds.

The volume of air being exchanged during a normal breathing cycle (tidal volume) is about:

A) 75 ml of air.
B) 150 ml of air.
C) 350 ml of air.
D) 500 ml of air.

Which of the following statements are correct?

1. Modern aircraft allow for 50 - 60% relative humidity in the cabin air under any conditions of flight, which is satisfactory for the body.
2. Thirst is a belated symptom of dehydration.
3. Dehydration may lead to clinical manifestations such as dizziness and fatigue.
4. Drinking excessive quantities of water must be avoided since resistance to periods of low hydration will otherwise be lost.

A) 1, 2, 4
B) 1, 4
C) 2, 3
D) 2, 3, 4

In the pulmonary artery there is:

A) oxygen rich and carbon dioxide rich blood.
B) oxygen poor and carbon dioxide poor blood.
C) oxygen poor and carbon dioxide rich blood.
D) oxygen rich and carbon dioxide poor blond.

The barometric pressure has dropped to 1/2 of the pressure at sea level at:

A) 30.000 feet.
B) 25.000 feet.
C) 10.000 feet.
D) 18.000 feet.

The atmosphere is a mixture of gases and the largest part is:

A) Oxygen.
B) Nitrogen.
C) Hydrogen.
D) Helium.

Which of the following symptoms could a pilot get, when he is subjected to hypoxia?

1. Fatigue.
2. Euphoria.
3. Lack of concentration.
4. Pain in the joints.
5. Sensation of suffocation.

A) 4 and 5 are correct
B) 1, 2, 3 and 4 are correct
C) Only 5 is false
D) 1, 2 and 3 are correct

How can a pilot increase his tolerance to + Gz?

A) Relax the muscles, ducking the head and lean upper body forward.
B) Tightening of muscles, ducking the head and perform a kind of pressure breathing.
C) Tighten shoulder harness.
D) Take an upright seat position.

You can survive at any altitude, provided that:

A) enough oxygen, pressure and heat is available.
B) pressure respiration is guaranteed for that altitude.
C) the temperature in the cabin does not drop below 10° C.
D) 21% oxygen is available in the air you breath in.

Which component(s)is/are transporting the oxygen in the blood?

A) White blood cells.
B) Haemoglobin in the red blood cells.
C) Blood fat.
D) Plasma.

The normal arterial blood-pressure of a healthy adult is (systolic/diastolic):

A) 220/180 mm Hg.
B) 120/80 mm Hg.
C) 180/120 mm Hg.
D) 80/20 mm Hg.

What is most correct regarding hypoxia?

A) It is caused by too much CO2 in the air.
B) It is the result of insufficient oxygen in the blood stream.
C) It causes chest pain.
D) It is an abnormal reduction of the haemoglobin content of the red blood cells.

Which one of the following signs distinguishes hypoxia from hyperventilation?

A) Cyanosis.
B) Sensory loss.
C) Dizziness.
D) Headache.

What event can cause a hyperventilation (not required by physical need)?

1. Pressure breathing.
2. Anxiety or fear.
3. Overstress.
4. Strong pain.
5. Jogging.

A) Only 2 and 3 are correct.
B) 1, 2, 3, 4 and 5 are correct.
C) 1 and 5 are both false.
D) 1, 2, 3 and 4 are correct, 5 is false.

Saturation of oxygen in the blood at sea level is 98%. This saturation decreases with:

1. decreasing air pressure
2. carbon monoxide poisoning
3. increasing altitude
4. increasing air pressure

A) 1, 2 and 4 are correct, 3 is false
B) 2, 3 and 4 are correct, 1 is false
C) 1, 2 and 3 are correct, 4 is false
D) 1, 3 and 4 are correct, 2 is false

What controls the volume of breathing?

A) Pharynx.
B) Angina.
C) Receptor cells in the brain.
D) Alveoli in the lungs.

Which of the following is true concerning carbon monoxide?

A) It combines 5 times faster to the haemoglobin than oxygen.
B) It is to be found in the smoke of cigarettes lifting up a smokers physiological altitude.
C) It has no physiological effect when mixed with oxygen.
D) It is always present in the lungs.

The severity of hypoxia depends on the:

1. rate of decompression
2. physical fitness
3. flight level
4. individual tolerance

A) 1, 2 and 3 are correct, 4 is false.
B) 2,3 and 4 are correct, 1 is false.
C) 1 and 3 are correct, 2 and 4 are false.
D) 1, 2, 3 and 4 are correct.

Which is the procedure to be followed when symptoms of decompression sickness occur?

A) Descend to the lowest possible level and wait for the symptoms to disappear before climbing again.
B) Only the prompt supply of oxygen is necessary.
C) Only medical treatment is of use.
D) Descend to the lowest possible level and land as soon as possible.

You suffered a rapid decompression without the appearance of any decompression sickness symptoms. How long should you wait until your next flight?

A) 24 hours.
B) 36 hours.
C) 12 hours.
D) 48 hours.

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1. Euphoria can be a symptom of hypoxia.
2. Someone in an euphoric condition is more prone to error.

A) 1 and 2 are both correct
B) 1 is correct, 2 is not correct.
C) 1 is not correct, 2 is correct.
D) 1 and 2 are both not correct.

Flying immediately following a dive with SCUBA diving equipment (> 10 m depth):

A) prevents any dangers caused by aeroembolism (decompression sickness) when climbing to altitudes not exceeding 30.000 ft
B) can cause decompression sickness even when flying at pressure altitudes below 18.000 ft.
C) has no influence on altitude flights.
D) is forbidden for the flight crew, because it leads to hypoxia.

Breathing 100% O_2 will lift the pilots physiological safe altitude to approximately:

A) 10.000 ft.
B) 45.000 ft.
C) 38.000 ft.
D) 22.000 ft.

If a pilot in an un-pressurised aircraft suffers from severe stomach pain in flight. He/she should:

A) climb.
B) descend.
C) descend rapidly and seek medical advice.
D) pressure breathe oxygen.

According to the ICAO standard atmosphere, the temperature lapse rate of the troposphere is approximately:

A) 2 ° C every 1.000 metres
B) constant in the troposphere
C) 2 ° C every 1.000 feet
D) 10 ° C every 100 feet

Signs or symptoms of hyperventilation are:

A) all above mentioned signs or symptoms.
B) increased rate and depth of respiration.
C) muscle twitching and tightness.
D) breathlessness, feelings of suffocation.

The partial pressure of carbon dioxide in the alveoli is:

A) lower than the pressure of carbon dioxide in the atmospheric air.
B) lower than in the blood.
C) higher than the pressure of carbon dioxide in the blood.
D) almost the same as in the atmospheric air.

The statement: Adjacent gases of different concentration mix until the concentration is balanced:

A) is known as Daltons law
B) is known as Henrys law.
C) is known as Charles law.
D) is known as Diffusion law.

You climb from 0 to 50.000 ft and measure the decrease of the pressure per 5.000 ft. The absolute difference in barometric pressure is greatest between:

A) 5.000 ft and 10.000 ft.
B) 0 ft and 5.000 ft.
C) 10.000ft and 15.000 ft.
D) 45.000 ft and 50.000 ft.

The effects of Galactic radiation:

A) increases with altitude.
B) remains steady up to 49,000 ft. and thereafter increases.
C) is unaffected by altitude.
D) decreases with altitude.

During a climb, we can observe the following with regard to the partial oxygen pressure:

A) an increase which is inversely proportional to the decrease in atmospheric pressure.
B) a decrease which is three times faster than the decrease in atmospheric pressure.
C) an increase up to 10.000 ft followed by a sudden pressure drop above that altitude.
D) an identical decrease to that for atmospheric pressure.

What is the purpose of respiration?

A) Intake of NO2, which the living cells need for the metabolic process.
B) Intake of CO2, which the living cells need for the metabolic process.
C) Intake of O2, which the living cells need for the metabolic process.
D) Intake of N2, which the living cells need for the metabolic process.

You should not dispense blood without prior information from your flight surgeon. The most important reason for this advise is:

A) you are more susceptible to hypoxia after a blood-donation.
B) your heart frequency is too low after blood-donation.
C) your blood-pressure is too low after blood-donation.
D) the chance you get the bends is higher after blood-donation.

Symptoms caused by gas bubbles in the lungs, following a decompression are called:

A) bends.
B) leans.
C) chokes.
D) creeps.

The momentum of gas exchange in respiration is:

A) depending on the active transportation of nitrogen into the alveoli.
B) independent from the partial pressures of the participating gases.
C) the excess pressure caused by inhaling.
D) dependent on the pressure gradient between the participating gases during respiration.

Early symptoms of hypoxia could be:

1. euphoria
2. decreased rate and depth of breathing
3. lack of concentration
4. visual disturbances

A) 1,2 and 3 are correct.
B) 1,2,3 and 4 are correct.
C) 1,3 and 4 are correct.
D) 1,2 and 4 are correct.

Which of the following statements concerning Barotrauma are correct? They are:

A) due to pressure differentials between gases in hollow cavities of the body and the ambient pressure.
B) more likely to occur during ascent then during a rapid descent.
C) caused by an increase in the partial pressure of oxygen associated with a decrease in altitude.
D) mainly associated with a sink rate which exceeds the ability of the body to balance its internal pressures.

The following statement about UV radiation is false:

A) UVA penetrates deeply into the skin and causes sunburn.
B) acute UV exposure can cause snow blindness.
C) UVC usually doesn' t reach the earth.
D) UVB penetrates deeper into the skin than UVA and causes skin cancer.

When the pilot suffers from hypothermia (loss of cabin heating):

A) his oxygen need will be raised and his tolerance to hypoxia will be increased.
B) his need for oxygen will be increased as long as he stays conscious.
C) his oxygen need will not be affected.
D) his oxygen need will be reduced giving him a better tolerance to hypoxia at higher altitudes.

Expired air contains;

A) 15% oxygen and 0.03% carbon dioxide.
B) 21% oxygen and 4% carbon dioxide.
C) 21% oxygen and 0.03% carbon dioxide.
D) 15% oxygen and 4% carbon dioxide.

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161. With regard to the humidity of air in current in a pressurized cabin, we know that it:

1. varies between 40 and 60%
2. varies between 5 and 15%
3. may cause dehydration effecting the performance of the crew
4. has no special effects on crew members

Correct answer:

A) 1,4
B) 2,3
C) 2,3,4
D) 1,3

At a high altitude flight (no cabin pressure system available), a pilot gets severe flatulence due to trapped gases.
The correct counter-measure is:

A) climb to a higher altitude.
B) perform valsalva manoeuvre.
C) use supplemental oxygen.
D) descend to lower altitude.

Following a rapid decompression at 30.000 feet, the time of useful consciousness would be about:

A) 10 to 12 minutes.
B) 5 to 10 minutes.
C) 1 to 2 minutes.
D) 3 to 5 minutes.

Among the factors which affect acuity are:

A) Smoking, colour blindness and angular distance from the fovea.
B) Colour blindness, alcohol and angular distance from the fovea.
C) Hypoxia, age and angular distance from the fovea.
D) Colour blindness, visibility and angular distance from the fovea.

To overcome the symptoms of hyperventilation, a pilot should:

A) Increase the breathing rate.
B) Slow the breathing rate.
C) Use 100% oxygen.
D) Swallow or yawn.

What is the Time of Useful Consciousness?

A) The pilots reaction time when faced with hypoxia.
B) The period of time between the start of hypoxia and the moment that the pilot becomes aware of it.
C) The length of time during which an individual can act with both mental and physical efficiency and alertness, measured from the moment at which he loses his available oxygen supply.
D) The time taken to become aware of hypoxia due to gradual decompression.

Decompression sickness can be prevented by:

1. avoiding cabin altitudes above 18.000 ft
2. maintaining cabin pressure below 8.000ft when flying at high altitudes
3. performing physical exercises before and during the flight
4. breathing 100 % oxygen for 30 min prior and during the flight

A) 2 and 3 are correct, 4 is false.
B) 1, 2 and 4 are correct.
C) 1, 2 and 3 are correct.
D) only 3 is correct.

Henrys law states:

A) the quantity of a gas dissolved in a liquid is inversely proportional to the pressure of the gas.
B) the volume of a gas is inversely proportional to its pressure.
C) the quantity of a gas dissolved in a liquid is proportional to the temperature of the gas.
D) the quantity of a gas dissolved in a liquid is proportional to the partial pressure of the gas.

Oxygen in the blood is primarily transported by:

A) attaching itself to the haemoglobin in the red blood plasma.
B) attaching itself to the haemoglobin in the white blood cells.
C) the blood plasma.
D) the haemoglobin in the red blood cells.

Normal cabin pressure is:

A) 6,000 - 8,000 ft
B) 5,000 ft
C) 10,000 ft
D) 3,000 - 4,000 ft

Which phenomenon is common to hypoxia and hyperventilation?

A) Euphoria
B) Severe headache
C) Tingling sensations in arms or legs
D) Cyanosis (blueing of lips and finger-nails)

The critical altitude at which hypoxia starts is:

A) 5.500 feet
B) 12.000 feet
C) 32.000 feet
D) 18.000 feet

A pilot, climbing in a non-pressurised aircraft and without using supplemental oxygen will pass the critical threshold at approximately:

A) 16 000 ft.
B) 38 000 ft.
C) 22 000 ft.
D) 18 000 ft.

Which of the following is true with respect to the cause of DCS:

A) Altitudes above 5.000 ft.
B) Climbing at more than 500 ft/min to altitude greater than 18.000 ft.
C) Temperatures greater than 24 deg C at altitudes of over 2.000 ft.
D) Altitudes above 18.000 ft in an unpressurised aircraft.

What is hypertension?

A) A physiological condition involving increased pressure on the arterial walls.
B) A symptom of reduced oxygen supply to the heart muscle.
C) A blockage of the blood supply to part of the brain.
D) A blockage of the coronary artery.

TUC following loss of pressurisation at 35.000 ft is:

A) 10 - 15 seconds.
B) 30 - 60 seconds.
C) 5 minutes upwards.
D) 3 - 4 minutes.

Hyperventilation is:

A) an increased lung ventilation.
B) a decreased lung ventilation.
C) a too high percentage of nitrogen in the blood.
D) a too high percentage of oxygen in the blood.

In order to get rid of excess nitrogen following scuba diving, subsequent flights should be delayed:

A) 3 hours after non decompression diving.
B) 24 hours.
C) 48 hours after a continuous ascent in the water has been made.
D) 36 hours after any scuba diving.

Hyperventilation causes:

A) acidosis.
B) an excess of carbon dioxide in the blood.
C) hypochondria.
D) a lack of carbon dioxide in the blood.

Decompression sickness occurs in association with exposure to reduced atmospheric pressure. The evolution of bubbles of nitrogen coming out of solution in body tissues can be derived from:

A) Boyle Mariottes law.
B) Gay Lussacs law.
C) Henrys law.
D) Dalton law.

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181. You suffers a rapid decompression without the appearance of any decompression sickness symtoms. How long should you wait until your next flight?

A) 36 hours.
B) 12 hours.
C) 24 hours.
D) 48 hours.

Henrys Law is the underlying reason for:

A) Hypoxia.
B) Hypertension.
C) DCS.
D) Hypotension.

What is meant by metabolism?

A) The transformation by which energy is made available for the uses of the organism
B) Information exchange
C) Transfer of chemical messages
D) Exchange of substances between the lung and the blood

Hyperventilation can cause unconsciousness, because:

A) not enough time is left to exchange oxygen in the lungs.
B) blood circulation to the brain is slowed down.
C) oxygen saturation of the blood is increased and the brain will be supplied with more blood than normal.
D) oxygen saturation of the blood is decreased.

The transfer of carbon dioxide from the blood to the alveoli can be described by:

A) Daltons Law.
B) Henrys Law
C) Boyles Law.
D) the law of diffusion.

Fatigue and permanent concentration:

A) lower the tolerance to hypoxia.
B) will increase the tolerance to hypoxia when flying below 15.000 feet.
C) do not affect hypoxia at all.
D) increase the tolerance to hypoxia.

The composition of the atmosphere at 50.000 ft is:

A) 78% oxygen, 21% nitrogen, ~1% argon, 0.3% carbon dioxide.
B) 78% oxygen, 21% argon, ~1% nitrogen, 0.3%carbon dioxide.
C) 78% nitrogen, 21% oxygen, ~1% argon, 0.03% carbon dioxide.
D) 78% nitrogen, 21% oxygen, ~1% argon, 0.3% carbon dioxide.

Which measure(s) will help to compensate hypoxia?

1. Descend below 10.000 FT.
2. Breathe 100 % oxygen.
3. Climb to or above 10.000 FT.
4. Reduce physical activities.

A) 1 and 2 are correct, 3 and 4 are false.
B) 1, 2 and 4 are correct.
C) Only 1 is correct.
D) 1, 2 and 3 are correct.

Which of the following could a pilot experience when he is hyperventilating?

1. Dizziness
2. Muscular spasms
3. Visual disturbances
4. Cyanosis

A) 1,2 and 4 are correct, 3 is false
B) 1 is false, all others are correct
C) 2 and 4 are false
D) 1,2 and 3 are correct, 4 is false

The two most important early symptoms of Hypoxic Hypoxia are:

A) Flushed cheeks and cherry-red lips.
B) Bends and Creeps.
C) Apparent personality change and impaired judgement.
D) Formication and Cyanosis.

Trapped intestinal gases can cause severe pain. When is this the case:

A) During descent as well as during climb, when the cabin pressure altitude is exceeding 2.000 FT.
B) At lower altitudes.
C) More frequent when flying above 18.000 FT in a non-pressurized aircraft.
D) Only in pressurized aircraft when flying at higher flight levels.

In the event of rapid decompression the first action for the flight deck crew is:

A) don oxygen masks and ensure oxygen flow.
B) descent to the higher of 10000 ft or MSA.
C) carry out check for structural damage.
D) transmit mayday call.

The type of hypoxia, which occurs at altitude is a explained by:

A) Grahams law.
B) Daltons law.
C) Boyle Mariottes law.
D) Henrys law.

What is hyperventilation?

A) Elevated arterial blood pressures, both systolic and diastolic.
B) A reduction in the O2 carrying abilities of the blood.
C) Excessive rate and depth of respiration leading to abnormal loss of CO2 from the blood.
D) A condition which prevents the diffusion of O2 from the lungs to the bloodstream.

The effect of hypoxia to vision:

A) is stronger with the rods.
B) can only be detected when smoking tobacco.
C) is usual stronger with the cones.
D) does not depend on the level of illumination.

Barotrauma of the middle ear is usually accompanied by:
A) dizziness.
B) pain in the joints.
C) a reduction in hearing ability and the feeling of increasing pressure.
D) noises in the ear.

The partial pressure of the respiratory gases within the pulmonary alveoli is
A) 40 mmHg pCO_2, 47 mmHg pH_2O, 100 mmHg O_2
B) 5 mmHg pCO_2, 10 mmHg pH_2O, 150 mmHg O_2
C) 47 mmHg pH_2O, 150 mmHg O_2, 0.03 mmHg pCO_2
D) 46 mmHg pCO_2, 47 mmHg pH_2O, 40 mmHg O_2

You climb from 0 to 50.000 ft and measure the decrease of the pressure per 5.000 ft. The absolute difference in barometric pressure is greatest between:
A) 45.000 ft and 50.000 ft.
B) 10.000ft and 15.000 ft.
C) 5.000 ft and 10.000 ft.
D) 0 ft and 5.000 ft.

The symptoms of hyperventilation are easily confused with those of:
A) hyperopia.
B) hypotension.
C) hypertension.
D) hypoxia.

The transfer of oxygen from the alveoli to the blood can be described by:
A) the law of diffusion.
B) Daltons Law.
C) Henrys Law.
D) Boyles Law.

---

201. The partial pressure of carbon dioxide in the alveoli is:
A) almost the same as in the atmospheric air.
B) lower than in the blood.
C) higher than the pressure of carbon dioxide in the blood.
D) lower than the pressure of carbon dioxide in the atmospheric air.

In the following list you will find several symptoms listed for hypoxia and carbon monoxide poisoning. Please mark those referring to carbon monoxide poisoning:
A) Headache, increasing nausea, dizziness.
B) Euphoria, accommodation problems, blurred vision.
C) High levels of arousal, increased error proneness, lack of accuracy.
D) Muscular spasms, mental confusion, impairment of hearing.

Gaseous exchange in the human body depends on:

1. diffusion gradients between the participating gases.
2. permeable membranes.
3. partial pressure of oxygen in the alveolus air
4. acid-base balance in the blood.

A) only 1 is correct.
B) 1, 2 and 3 are correct, 4 is false.
C) 2 and 3 are false.
D) 1, 2, 3 and 4 are correct.

The Time of Useful Consciousness may vary according to:

1. physical activity of the subjected crew
2. the experience of the pilot on the type of aircraft in question
3. the strength and time of decompression
4. the cabin temperature

A) 4
B) 1, 3
C) 3, 4
D) 1, 2

Boyles law is directly applicable in case of:

A) the occurrence of decompression sickness at high altitude.
B) hyperventilation with increasing altitude.
C) the occurrence of hypoxia with increasing altitude.
D) the expansion of trapped gasses in the human body with increasing altitude.

In civil air transport, linear accelerations (Gx):

1. do not exist
2. have slight physiological consequences
3. may, in the case of pull-out, lead to loss of consciousness
4. cause sensory illusions on the pitch axis

A) 2,4
B) 3
C) 3,4
D) 1

The ozone layer is:

A) in the mesosphere.
B) in the troposphere.
C) in the stratosphere.
D) at sea level.

The average pulse of a healthy adult in rest is about:

A) 30 to 50 beats/min.
B) 90 to 100 beats/min.
C) 60 to 80 beats/min.
D) 110 to 150 beats/min.

Ozone:

A) consists of oxygen and nitrogen.
B) consists of molecular hydrogen.
C) consists of molecular oxygen.
D) consists of atomic hydrogen.

If someone hyperventilates due to stress his blood will get:

A) more saturated with carbon dioxide.
B) less saturated with oxygen.
C) more acid.
D) more alkaline.

When the pressoreceptors signal a lowering of the blood-pressure there are adaptation mechanisms which result in:

1. an increase of respiratory activity
2. the arteriols to constrict
3. an increase of cardiac output
4. the heart rate to rise

A) 1,2 and 4 are correct, 3 is false
B) 1,3 and 4 are correct, 2 is false
C) 2,3 and 4 are correct, 1 is false
D) 1,2 and 3 are correct, 4 is false

The rate and depth of breathing is primary regulated by the concentration of:

A) nitrogen in the air.
B) carbon dioxide in the blood.
C) oxygen in the cells.
D) water vapour in the alveoli.

The following actions are appropriate when faced with symptoms of decompression sickness:

1. climb to higher level
2. descent to the higher of 10000 ft or MSA and land as soon as possible
3. breathe 100 % oxygen
4. get medical advice about recompression after landing

A) 2, 3 and 4 are correct
B) 1 and 4 are correct
C) 1 and 3 are correct
D) 1, 2 and 3 are correct

With a pulse rate of 72 beats a minute and a stroke volume of 70 ml, what is the cardiac output?

A) 8 litres a minute.
B) 6 litres a minute.
C) 7 litres a minute.
D) 5 litres a minute.

Smoking reduces the bloods ability to carry oxygen because:

A) haemoglobin has a greater affinity for CO.
B) CO5 takes a larger lung volume.
C) the inspiratory tract becomes obstructed.
D) CO gets trapped in the alveoli and restricts internal respiration.

Susceptibility to carbon monoxide poisoning, as from smoking tobacco, increases as:

A) air temperature increases.
B) altitude increases.
C) air pressure increases.
D) altitude decreases.

Which data compose the ICAO standard atmosphere?

1. Density
2. Pressure
3. Temperature
4. Humidity

A) 3, 4
B) 2, 3, 4
C) 1, 2, 4
D) 1, 2, 3

Cones see ... and adapt in approximately ... whereas the rods see ... and adapt in approximately ... when moving from high to low levels of light.

A) black and white; 7 minutes; colour; 30 minutes.
B) black and white; 30 minutes; colour; 7 minutes.
C) colour; 7 minutes; black and white; 30 minutes.
D) colour; 30 minutes; black and white; 7 minutes.

How can alcohol create hypoxia?

A) Alcohol can create histotoxic hypoxia, since it increases the physiological altitude. Individuals who have consumed 1 ounce of alcohol can have a physiological altitude of 2000 feet.
B) Alcohol can create histotoxic hypoxia since, like smoking, it increases the physiological altitude. In some cases, an individual who has consumed 1 ounce of alcohol has a physiological altitude of 7000 feet.
C) An individual under the influence of alcohol will be susceptible to hypoxia because it is greatly influenced by metabolic rate and emotions.
D) An individuals susceptibility to hypoxia is greatly influenced by metabolic rate, diet, nutrition, alcohol and emotions.

Inhaling carbon monoxide can be extremely dangerous during flying. Which of the following statement(s) is/are correct?

A) With increasing altitude the negative effects of carbon monoxide poisoning will be compensated.
B) Carbon monoxide increases the oxygen saturation in the blood.
C) Small amounts of carbon monoxide are harmless.
D) Carbon monoxide is odourless and cannot be smelled.

221. Where is the critical threshold at which a pilot not using oxygen reaches the critical or lethal zone? It starts at:

A) 38.000 ft
B) 21.000 ft.
C) 25.000 ft.
D) 18.000 ft.

The most dangerous symptoms of hypoxia at altitude are:

A) breathlessness and reduced night vision.
B) hyperventilation.
C) sensation of heat and blurred vision.
D) euphoria and impairment of judgement.

Which of the following statements about hyperthermia is correct?

A) Evaporation is more effective when ambient humidity is high.
B) Complete adaptation to the heat in a hot country takes about a fortnight.
C) Vasodilation is the only regulate which is capable of reducing . body temperature.
D) Performance is not impaired by an increase in body temperature to 40° C or more.

The following statement about UV radiation is false:

A) dark-skinned, black-haired, brown-eyed subjects are least sensitive to UV radiation.
B) the risk to accumulate harmful UV radiation is higher at FL 450 than at sea level.
C) the harmful effects of UV radiation depend on the type of skin of a subject.
D) light- skinned, blond, blue-eyed subjects are least sensitive to UV radiation.

The occurrence of pain in the joints (bends) during decompression can be explained by the principle that:

A) the quantity of a gas dissolved in a fluid is proportional to the pressure of that gas above the fluid (Henrys Law).
B) a volume of gas is inversely proportional to the pressure of this gas at constant temperature (Boyles law).
C) the molecules of a gas will move from an area of higher concentration or partial pressure to an area of lower concentration or partial pressure (law of diffusion)
D) the total pressure of a mixture of gases is equal to the sum of the partial pressures of the separate gases (Daltons Law)

How much of our knowledge is acquired through hearing?

A) 13%.
B) 35%.
C) 45%.
D) 25%.

Which would most likely result in hyperventilation?

A) Diving within 24 hours before flying
B) An extremely slow rate of breathing and insufficient oxygen
C) The excessive consumption of alcohol
D) Emotional tension, anxiety or fear

What is the Time of Useful Consciousness for a rapid decompression at 25.000 ft?

A) Between 25 seconds and 1 minute 30 seconds.
B) About 30 seconds.
C) About 18 seconds.
D) Between 3 and 5 minutes depending on the physical activities of the subjected pilot.

During running your muscles are producing more CO2, raising the CO2 level in the blood. The consequence is:

A) cya.nosis
B) hypoxia.
C) vertigo.
D) hyperventilation (the rate and depth of breathing will increase).

A person experiencing light headaches, dizziness, tingling at the fingertips and breathing rapidly may be suffering from:

A) hyperventilation only
B) hypoxia only
C) hypoxia or hyperventilation
D) carbon monoxide poisoning

What is ozone?

A) A toxic gas.
B) A high altitude gas combination of oxygen and nitrox, which can impair respiratory functions.
C) A gas product of by uncompleted combustion.
D) Oxygen that has oxidised.

The following statement about relative humidity is false:

A) man feel comfortable at a relative humidity of 60 ... 70%
B) during a long haul flight, relative humidity in the cockpit is very low.
C) if an air mass is cooled its relative humidity increases.
D) if an air mass is warmed, its relative humidity increases.

The negative (radial) acceleration of an airplane affects the sitting pilot with inertia along:

A) the transverse body axis to the right.
B) the vertical body axis upwards.
C) the vertical body axis downwards.
D) the transverse body axis to the left.

Among the symptoms of hypoxia are:

1. Impaired judgement and euphoria.
2. Fast and heavy breathing.
3. Impairment of vision.
4. Muscular impairment.

A) 1 & 3
B) 1, 2, 3 and 4
C) 1, 3 and 4
D) 1, 2 and 4

What could be symptoms of hypoxia (when flying without oxygen) above 12.000 ft?

A) Headache, thirst, somnolence, collapse.
B) Headache, fatigue, dizziness, lack of coordination.
C) Trembling, increase in body temperature, convulsions, slowing of the rate of breathing.
D) Euphoria, headache, improvement in judgement, loss of consciousness.

Which of the following symptoms is not typical for a decompression sickness:

A) Creeps
B) red out
C) bends
D) chokes

In airline operations decompression sickness symptoms:

A) may affect people with defect tympanic membrane.
B) appear only in air crew, previously engaged in diving activities.
C) may develop when being decompressed from MSL to 15 000 FT.
D) may develop after a decompression from 7000 FT cabin pressure altitude to 30000 FT flight altitude.

Which statement best defines hypoxia?

A) A condition of gas bubble formation around the joints or muscles.
B) A state of oxygen deficiency in the body.
C) A condition of too low CO2 level in the blood.
D) An abnormal increase in the volume of air breathed.

Smoking cigarettes reduces the capability of the blood to carry oxygen. This is because:

A) the smoke of one cigarette can cause an obstruction in the respiratory tract.
B) carbon monoxide increases the partial pressure of oxygen in the alveoli.
C) carbon monoxide in the smoke of cigarettes assists diffusion of oxygen in the alveoli.
D) haemoglobin has a greater affinity for carbon monoxide than it has for oxygen.

Blood from the pulmonary artery is?

A) Low in Oxygen and low in carbon dioxide.
B) Rich in Oxygen and rich in carbon dioxide.
C) Low in Oxygen and rich in carbon dioxide.
D) Rich in Oxygen and low in carbon dioxide.

241. Accommodation is:

A) has nothing to do with the lens.
B) increased by the hardening of the lens.
C) decreased by the hardening of the lens.
D) is not affected by the hardening of the lens.

To safely supply the crew with oxygen, at which altitude is it necessary to breathe 100% oxygen plus pressure after a rapid decompression?

A) Approximately 14.000 ft.
B) Approximately 38.000 ft.
C) Approximately 45.000 ft.
D) Approximately 20.000 ft.

Under normal circumstances, which gas will diffuse from the blood to the alveoli:

A) nitrogen.
B) carbon dioxide.
C) oxygen.
D) carbon monoxide.

With regard to decompression sickness associated with flight, we know that:

A) sex is the prime risk factor, with two out of every three women being sensitive to it.
B) age, obesity and scuba diving are risk factors.
C) scuba diving does not pose any problem for a subsequent flight
D) physical activity after decompression reduces the risks of decompression sickness symptoms to appear.

The circulatory system, among other things, allows for:

1. transportation of oxygen and carbon dioxide
2. transportation of information by chemical substances

A) both are false.
B) 1 and 2 are correct.
C) 1 is false and 2 is correct.
D) 1 is correct and 2 is false.

What counter-measure can be used against a barotrauma of the middle ear (aerotitis)?

A) Increase rate of descent.
B) Pilots should apply anti-cold remedies prior every flight to prevent barotrauma in the middle ear.
C) Close the mouth, pinch the nose tight and blow out thereby increasing the pressure in the mouth and throat. At the same time try to swallow or move lower jaw (Valsalva).
D) Stop climbing, start descent.

The atmospheric pressure:

A) at sea level is half the amount of the pressure at 18.000 ft.
B) at sea level is twice the amount of the pressure at 18.000 ft.
C) at 18.000 ft is half the amount of the pressure at 34.000 ft.
D) at 27.000 ft is half the amount of the pressure at sea level.

A pilot who smokes will loose some of his capacity to transport oxygen combined with hemoglobin. Which percentage of his total oxygen transportation capacity would he give away when he smokes one pack of cigarettes a day?

A) 0.5 - 2%
B) 12 - 18%
C) 20 - 25%
D) 5 - 8%

Daltons law explains the occurance of:

A) decompression sickness.
B) altitude hypoxia.
C) bends.
D) creeps.

Cardiac output is:

A) stroke volume minus the pulse rate and is normally 5.0 - 5.5 litres a minute.
B) stroke volume plus the pulse rate and is normally 5.0 - 5.5 litres a minute.
C) stroke volume times the pulse rate and is normally 5.0 - 5.5 litres a minute.
D) stroke volume divided by the pulse rate and is normally 5.0 - 5.5 litres a minute.

Which statement about partial pressure is correct?

A) The sum of the partial pressure of individual gases, in a mixture of gases, is equal to the total pressure.
B) Partial pressure decreases approximately 2% per 1000 feet.
C) One can calculate the partial pressure of a gas in a mixture by using Boyles law.
D) Partial pressure of oxygen in air is always approximately 20.

List the four major types of hypoxia, which are classified according to the cause of the hypoxia.

A) Hypoxic, hypaemic, hyperventic and histotoxic.
B) Altitude, CO, hyperventilation and self induced.
C) Anaemic, angina, stroke and seizure.
D) Hypoxic, hypaemic, stagnant and histotoxic.

The atmospheric pressure at 18.000 feet altitude is half the atmospheric pressure at sea level. In accordance with this statement,

A) the oxygen saturation of the blood at that altitude will drop by 50 % too
B) the partial oxygen pressure at that altitude will be doubled
C) the oxygen percentage of the air at that altitude will drop by one half also.
D) the partial oxygen pressure at that altitude will also drop to 1/2 of the pressure of oxygen at sea level

The following occurs in man if the internal body temperature increases to 38° C:

A) impairment of physical and mental performance.
B) nothing significant happens at this temperature. The first clinical signs only start to appear at 39° C.
C) considerable dehydration.
D) apathy.

The following may occur during gradual depressurisation between 12.000 and 18.000 ft:
A) sudden visual hyperacuity associated with headache.
B) a loss of coordination associated with fatigue and headache.
C) a rapid decrease in blood pressure which will lead to headache and also to a loss of coordination.
D) a rapid decrease in blood pressure leading to considerable somnolence.

Barotrauma caused by gas accumulation in the stomach and intestines can lead to:
A) decompression sickness.
B) pressure pain or flatulence.
C) barosinusitis.
D) barotitia.

The total air pressure at 33 700 ft. is 190 mmHg. What is the partial pressure of oxygen?
A) 380 mmHg.
B) 3.8 mmHg.
C) 148 mmHg.
D) Approximately 38 mmHg.

It is inadvisable to fly when suffering from a cold. The reason for this is:
A) swollen tissue in the Eustachian tube will cause permanent hearing loss.
B) gentle descents at high altitude can result in damage to the ear drum.
C) swollen tissue in the inner ear will prevent the air from ventilating through the tympanic membrane.
D) pain and damage to the eardrum can result, particularly during fast descents.

Changes in ambient pressure and accelerations during flight are important physiological factors limiting the pilots performance if not taken into consideration. Linear accelerations along the long axis of the body:
A) change blood pressure and blood volume distribution in the body.
B) will have an effect on blood pressure and blood fiow if the accelerative force acts across the body at right angles to the body axis.
C) will not stimulate any of the vestibular organs.
D) are of no interest when performing aerobatics.

Solar Radiation is ... than Galactic (Cosmic) radiation but can be more ... and is...
A) lower energy; intense; unpredictable;
B) higher energy; intense; predictable;
C) higher energy; intense; unpredictable;
D) lower energy; dangerous; predictable;

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261. A balloon with 10 litres of air is brought from mean sea level up to 34.000 feet. What is the volume of the balloon at this altitude, provided the temperature is kept constant?
A) 2.5 litres
B) 50 litres
C) 10 litres
D) 40 litres

Tolerance to decompression sickness is decreased by:

1. SCUBA-Diving
2. Obesity
3. Age
4. Body height

A) a and 3 are correct.
B) All are correct.
C) 1, 2 and 4.
D) 1, 2 and 3 are correct.

The symptoms of hyperventilation are caused by a:

A) shortage of CO2 in the blood.
B) surplus of O2 in the blood.
C) surplus of CO2 in the blood.
D) shortage of CO in the blood.

What is the normal tidal volume?

A) 150 ml.
B) 750 ml.
C) 500 ml.
D) 250 ml.

What is the content of Boyles law?

A) The pressure of a gas is proportional to altitude, with temperature remaining constant.
B) The volume of a gas is proportional to its pressure, with temperature remaining constant.
C) The volume of a gas is inversely proportional to its pressure, with temperature remaining constant.
D) A gas temperature will decrease with increasing altitude.

Barotrauma of the sinuses of the nose (aerosinusitis):

A) is an irritation of sinuses by abuse of nose sprays.
B) s only caused by colds and their effects.
C) is only caused toy the flying sport, not by the diving sport.
D) is caused by a difference in pressure existing between the sinus cavity and the ambient air.

Charles law states:

A) the volume of a gas at constant temperature is proportional to its absolute humidity.
B) the pressure of a gas at constant temperature is proportional to its volume.
C) the volume of a gas at constant pressure is proportional to its absolute temperature.
D) the relative temperature of a gas at constant pressure is proportional to its concentration.

Which of the following applies to carbon monoxide poisoning?

A) Several days are needed to recuperate from a carbon monoxide poisoning.
B) The human body shows no sign of carbon monoxide poisoning.
C) Inhaling carbon monoxide leads to hyperventilation.
D) A very early symptom for realising carbon monoxide poisoning is euphoria.

Breathing 100% oxygen at 38.000 ft is equivalent to breathe ambient air at:

A) 18.000 ft.
B) 10.000 ft.
C) 8.000 ft.
D) 14.000 ft.

Why not same as sea level

The respiratory control centre is primarily sensitive to:

A) argon.
B) carbon dioxide.
C) carbon monoxide.
D) oxygen.

A person should be able to overcome the symptoms of hyperventilation by:

A) Slowing the breathing rate and increasing the amount of carbon dioxide in the body.
B) Increasing the breathing rate, in order to increase ventilation.
C) A and C are correct.
D) Refraining from the use of alcohol and over-the-counter drugs such as antihistamines and tranquillisers.

The following statement about respiration is true:

A) transport of carbon dioxide in the blood is made by combination with haemoglobin.
B) transport of oxygen in the blood is made by combination with haemoglobin.
C) external respiration serves for the gas exchange between blood and tissue cells.
D) internal respiration serves for the gas exchange between environment and blood.

A pilot who is hyperventilating for a prolonged period of time may even get unconscious. Hyperventilation is likely to occur, when:

A) he is flying a tight turn.
B) there is an increased blood flow to the brain.
C) there is a low CO-pressure in the blood.
D) the pilot is emotionally aroused.

If a pilot experiences negative acceleration (Gz) what is the effect on the pilots inertia?

A) Upwards and vertical.
B) In transverse to the right.
C) In transverse to the left.
D) Downwards and vertical.

What is the average Time of Useful Consciousness after a rapid decompression at 40.000 ft?

A) More than 1 minute.
B) About 12 seconds.
C) Between 20 seconds and 1 minute.
D) About 40 seconds.

The Stroboscopic Effect normally is caused by flash frequencies between ... Hz and ... Hz:

A) 20 4000.
B) 2 500.
C) 5 20.
D) 10 2000.

The procedure to be followed in the event of decompression when flying above 10.000 ft must:

A) allow for a rapid descent independent from sufficient supply of oxygen in order to prevent disorders due to hypoxia.
B) allow for the rapid supply of oxygen in order to prevent the pilot becoming hypoxic.
C) make it possible to eliminate the risk of fogging due to the sudden pressure changes.
D) make it possible to prevent hyperventilation owing to the inhalation of 100 % oxygen

Affinity to haemoglobin is best with:

A) carbon monoxide.
B) nitrogen.
C) carbon dioxide.
D) oxygen.

Hypoxia is a situation in which the cells:

A) are saturated with nitrogen.
B) have a shortage of oxygen.
C) are saturated with oxygen.
D) have a shortage of carbon dioxide.

The ozone-layer is situated in the:

A) mesosphere and troposphere.
B) mesosphere
C) troposphere.
D) stratosphere.

281. What is a stroke?

A) A stroke occurs when blood supply to a certain part of an alveoli is cut off.
B) A stroke occurs when blood supply to a certain part of the brain is cut off.
C) A stroke is caused by angina to the heart.
D) A stroke is a blood vessel rupture in the brain and internal bleeding will cause too high internal pressure.

Which of the following factors may have an influence on medical disqualification?

A) High blood pressure only.
B) High and low blood pressure as well as a poor condition of the circulatory system.
C) Low blood pressure only.
D) Blood pressure problems cannot occur in aircrew because they always can be treated by in-flight medication.

What are the main clinical signs of hypoxia during explosive decompression?

A) Increase in heart and respiratory rates, euphoria, impairment of judgement, memory disorders.
B) Increase in heart rate, decrease in body temperature impairment of judgement.
C) Headaches, fatigue, somnolence, palpitations.
D) Headaches, articular pain, speeding-up of the respiratory rate, memory disorders.

The rate and depth of breathing is primarily regulated by the concentration of:

A) water vapour in the alveoli.
B) carbon dioxide in the blood.
C) nitrogen in the air.
D) oxygen in the cells.

Altitude-hypoxia, when breathing ambient air, should not occur (indifferent phase).

A) up to 5.000 m.
B) below 3.000 m.
C) between 3.000 m and 5.000 m.
D) between 5.000 m and 7.000 m.

The severity of hypoxia depends on the:

1. rate of decompression
2. physical fitness
3. flight level
4. individual tolerance

A) 2,3 and 4 are correct, 1 is false.
B) 1 and 3 are correct, 2 and 4 are false.
C) 1, 2 and 3 are correct, 4 is false.
D) 1, 2, 3 and 4 are correct.

During a final approach under bad weather conditions, you feel dizzy, get tingling sensations in your hands and a rapid heart rate. These symptoms could indicate:

A) disorientation
B) carbon monoxide poisoning
C) hyperventilation
D) hypoxia

Large amounts of carbon dioxide are eliminated from the body when hyperventilating. This causes the blood

A) to become more alkaline increasing the amount of oxygen to be attached to the hemoglobin at lung area
B) not to change at all
C) to accelerate the oxygen supply to the brain
D) to turn more acid thus eliminating more oxygen from the hemoglobin

The composition of the atmosphere

A) changes proportional to the atmospheric pressure.
B) is constant up to 500 km.
C) is constant up to 100 km.
D) changes above FL 500.

The following statements are true except:

A) inability of the tissue to use oxygen is called histotoxic hypoxia.
B) reduced oxygen carrying capacity is called hypemic hypoxia.
C) poor circulation is called hypoxic hypoxia.
D) reduced alveolar oxygen exchange is called hypoxic hypoxia.

Anxiety and fear can cause:

A) hypoxia.
B) hyperventilation.
C) spatial disorientation.
D) hypoglycaemia.

The statement: Adjacent gases of different concentration mix until the concentration is balanced:

A) is known as Charles law.
B) is known as Henrys law.
C) is known as Daltons law
D) is known as Diffusion law.

Decompression sickness may occur as from:

1. an altitude of more than 18.000 ft
2. an altitude of more than 5.500 ft
3. a rate of climb of more than 500 ft/min exceeding 18.000 ft
4. a temperature of more than 24° C

A) 1, 3
B) 1, 3, 4
C) 2, 4
D) 2, 3

Which statement is correct?

A) Oxygen diffusion from the lungs into the blood does not depend on partial oxygen pressure.
B) The blood plasma is transporting the oxygen.
C) The gradient of diffusion is higher at altitude than it is at sea-level.
D) Oxygen diffusion from the blood into the cells depends on their partial oxygen pressure gradient.

In relation to hypoxia, which of the following paraphrase(s) is (are) correct?

A) This is a physical condition caused by a lack of oxygen to meet the needs of the body tissues, leading to mental and muscular disturbances, causing impaired thinking, poor judgement and slow reactions.
B) This is a condition of lacking oxygen in the brain causing the circulatory system to compensate by decreasing the heart rate.
C) This is a physical condition caused by a lack of oxygen saturation in the blood while hyperventilating.
D) Hypoxia is often produced during steep turns when pilots turn their heads in a direction opposite to the direction in which the aircraft is turning.

Which law explains evolved gas problems?

A) Henrys law.
B) Charles law.
C) Boyles law.
D) Daltons law.

Linear acceleration can give a false impression of a:

A) climb.
B) descent.
C) spin.
D) turn.

The volume of air being exchanged during a normal breathing cycle (tidal volume) is about:

A) 350 ml of air.
B) 75 ml of air.
C) 500 ml of air.
D) 150 ml of air.

A pilot will get hypoxia:

A) after decompression at high altitude and not taking additional oxygen in time.
B) if his rate of climb exceeds 5 000 ft/min,
C) after decompression to 30 000 feet and taking 100 % oxygen via an oxygen mask.
D) if he is flying an un-pressurized airplane at an altitude of 15 000 feet and breathing 100 % oxygen.

The transfer of carbon dioxide from the blood to the alveoli can be described by:
A) Henrys Law
B) Daltons Law.
C) the law of diffusion.
D) Boyles Law.

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301. At what altitude (breathing 100% oxygen without pressure) could symptoms of hypoxia be expected?
A) Approximately 10-12.000 ft.
B) Approximately 38-40.000 ft.
C) Approximately 35.000 ft.
D) 22.000 ft.

The law that states Providing the temperature is constant, the volume of gas is inversely proportional to its pressure is:
A) Daltons Law.
B) The Combined Gas Law.
C) Boyles Law.
D) Henrys Law.

Short-term acceleration is 1 second or less whereas long-term acceleration is over 1 seconds:
A) False - the time is 1 minute.
B) False - the time is 20 seconds.
C) True.
D) False - the time is 5 minutes.

The momentum of gas exchange in respiration is:
A) dependent on the pressure gradient between the participating gases during respiration.
B) depending on the active transportation of nitrogen into the alveoli.
C) the excess pressure caused by inhaling.
D) independent from the partial pressures of the participating gases.

Which symptom does not belong to the following list:
A) creeps.
B) bends.
C) chokes.
D) leans.

You suffers a rapid decompression without the appearance of any decompression sickness symptoms. How long should you wait until your next flight?
A) 48 hours.
B) 24 hours.
C) 12 hours.
D) 36 hours.

Which of the following is true with respect to the cause of DCS:

A) Altitudes above 18.000 ft in an un-pressurised aircraft.
B) Climbing at more than 500 ft/min to altitude greater than 18.000 ft.
C) Temperatures greater than 24 deg C at altitudes of over 2.000 ft.
D) Altitudes above 5.000 ft.

The Stroboscopic Effect normally is caused by flash frequencies between ... Hz and ... Hz:

A) 20 4000.
B) 10 2000.
C) 5 20.
D) 2 500.

Hypoxia is caused by

A) a higher affinity of the red blood cells (haemoglobin) to oxygen.
B) reduced partial oxygen pressure in the lung.
C) reduced partial pressure of nitrogen in the lung.
D) an increased number of red blood cells.

Symptoms caused by gas bubbles in the lungs, following a decompression are called:

A) creeps.
B) chokes.
C) bends.
D) leans.

The brain controls breathing rate based upon the:

A) the acidity of the blood.
B) the amount of oxygen required at the capillaries.
C) sweat glands.
D) pulse rate.

Under normal circumstances, which gas will diffuse from the blood to the alveoli:

A) oxygen.
B) carbon dioxide.
C) carbon monoxide.
D) nitrogen.

Inhaling carbon monoxide can be extremely dangerous during flying. Which of the following statement(s) is/are correct?

A) With increasing altitude the negative effects of carbon monoxide poisoning will be compensated.
B) Carbon monoxide increases the oxygen saturation in the blood.
C) Small amounts of carbon monoxide are harmless.
D) Carbon monoxide is odourless and cannot be smelled.

Internal respiration takes place in the:
A) Trachea.
B) Bronchial tree.
C) Cells by diffusion.
D) Alveoli.

A pilot, climbing in a non-pressurised aircraft and without using supplemental oxygen will pass the critical threshold at approximately:
A) 16 000 ft.
B) 20 000 ft.
C) 38 000 ft.
D) 18 000 ft.

The heart muscle is supplied with blood from:
A) the pulmonary veins.
B) the coronary arteries.
C) ventricles.
D) the auricles.

After a cabin pressure loss in approximately 35.000 ft the TUC (Time of Useful Consciousness) will be approximately:
A) 30 - 60 seconds.
B) 5 minutes or more.
C) 10 -15 seconds.
D) 3 - 4 minutes.

The pressoreceptors are located in:
A) the heart.
B) the lungs.
C) the carotid and aortic arterial vessels.
D) the intestines.

Hypoxia can also be caused by:
A) increasing oxygen partial pressure used for the exchange of gases.
B) a lack of red blood cells in the blood or decreased ability of the haemoglobin to transport oxygen.
C) too much carbon dioxide in the blood.
D) a lack of nitrogen in ambient air.

The total air pressure at 33 700 ft. is 190 mmHg. What is the partial pressure of oxygen?
A) Approximately 38 mmHg.
B) 148 mmHg.
C) 380 mmHg.
D) 3.8 mmHg.

321. Symptoms of decompression sickness:

A) can only develop at altitudes of more than 40.000 ft.
B) are only relevant when diving.
C) are flatulence and pain in the middle ear.
D) are bends, chokes, skin manifestations, neurological symptoms and circulatory shock.

The critical altitude at which hypoxia starts is:

A) 32.000 feet
B) 12.000 feet
C) 5.500 feet
D) 18.000 feet

Decompression sickness may occur as a result from:

1. an altitude of more than 18,000 ft
2. an altitude of more than 5,500 ft
3. a rate of climb of more than 500 ft/min exceeding 18,000 ft
4. a temperature of more than 24° C

A) 3
B) 2
C) 4
D) 1

Daltons law states:

A) the partial pressure of a gas in a mixture is inversely proportional to its temperature.
B) the volume of a gas is inversely proportional to its pressure.
C) the partial pressure of a gas in a mixture is inversely proportional to its fractional concentration.
D) the partial pressure of a gas is proportional to its fractional concentration in a gas mixture.

If a pilot experiences negative acceleration (Gz) what is the effect on the pilots inertia?

A) In transverse to the left.
B) Downwards and vertical.
C) In transverse to the right.
D) Upwards and vertical.

Breathing 100% oxygen at 38.000 ft is equivalent to breathe ambient air at:

A) 14.000 ft.
B) 18.000 ft.
C) 10.000 ft.
D) 8.000 ft.

Grey out can be observed if a pilot is subjected to more than:
A) + 3 Gx
B) + 3 Gz
C) 3 Gz
D) + 3 Gy

List the four major types of hypoxia, which are classified according to the cause of the hypoxia.
A) Anaemic, angina, stroke and seizure.
B) Hypoxic, hypaemic, hyperventic and histotoxic.
C) Hypoxic, hypaemic, stagnant and histotoxic.
D) Altitude, CO, hyperventilation and self induced.

Henrys Law explains the occurrence of:
A) diffusion.
B) hypoxia.
C) hyperventilation.
D) decompression sickness.

In the realm of human physiology, the venturi effect is most related to:
A) BMI
B) decompression
C) NIHL
D) none of the above

To maintain sea level conditions at 25.000 ft, the percentage of oxygen breathing is:
A) 100%
B) 62%
C) 21%
D) 40%

Decompression symptoms are caused by:
A) release of locked gases from joints.
B) low carbon dioxide pressure of inhaled air.
C) dissolved gases from tissues and fluids of the body.
D) low oxygen pressure of inhaled air.

What is the Time of Useful Consciousness for a rapid decompression at 25.000 ft?
A) Between 3 and 5 minutes depending on the physical activities of the subjected pilot.
B) About 30 seconds.
C) About 18 seconds.
D) Between 25 seconds and 1 minute 30 seconds.

Hypothermia causes a:
A) decrease in the demand for oxygen.
B) none of the above.
C) increase in the demand for oxygen and eventually lends to unconsciousness.
D) increase in the demand for oxygen.

What type of acceleration has the most significant physiological effect upon the pilot?

A) Combined linear and transverse acceleration.
B) Radial acceleration (+ Gz).
C) Linear acceleration (+ Gx).
D) Transverse acceleration (+ Gy).

A person experiences increased breathing rate. Which of the following is the most likely explanation?

A) a low level of waste carbon dioxide in the lungs
B) a low level of water vapour in the lungs
C) a high level of waste carbon dioxide in the lungs
D) a high level of water vapour in the lungs

Fatigue and permanent concentration:

A) do not affect hypoxia at all.
B) will increase the tolerance to hypoxia when flying below 15.000 feet.
C) increase the tolerance to hypoxia.
D) lower the tolerance to hypoxia.

The earths atmosphere consists of different gases in various concentration. Match the following:

1. nitrogen A 0,03%
2. oxygen B 0,92%
3. carbon dioxide C 20.95%
4. rare gas D 78,10%

A) 1C, 2B, 3A, 4D
B) 1D, 2C, 3B, 4A
C) 1B, 2A, 3D, 4C
D) 1D, 2C, 3A, 4B

The Otoliths (Utricles and Succules) detect:

A) Linear Acceleration.
B) Linear and angular acceleration.
C) G forces.
D) Angular acceleration.

One of the most frequent symptom(s) of decompression sickness emerging after a decompression in airline operation:

A) are neurological damages to the CNS.
B) are the bends.
C) are the chokes.
D) is a shock.

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341. What is heart infarct?

A) A heart infarct is a blockage of the coronary artery; it will almost always lead to a heart attack.
B) A heart infarct is the same as a heart attack.
C) A heart infarct is a blockage of the coronary vein.
D) A heart infarct is a blockage of the coronary artery; it will seldom lead to a heart attack.

The composition of the atmosphere at 21.000 ft is approximately:

A) 78% Helium, 21% Oxygen and 0.003% Carbon Dioxide + traces.
B) 78% Helium, 21% Oxygen and 1% Carbon Dioxide.
C) 78% Nitrogen, 21% Oxygen and 1% Carbon Dioxide + traces.
D) 78% Carbon Dioxide, 21% Oxygen and 1% Nitrogen + traces.

Anxiety and fear can cause:

A) hypoxia.
B) hyperventilation.
C) hypoglycaemia.
D) spatial disorientation.

The effects of Galactic radiation:

A) decreases with altitude.
B) is unaffected by altitude.
C) remains steady up to 49,000 ft. and thereafter increases.
D) increases with altitude.

The Time of useful consciousness (TUC) at 43,000 ft in the event of progressive decompression for sitting and moderate activity is:

A) 30 and 15 seconds.
B) 40 and 20 seconds.
C) 18 and 12 seconds.
D) 30 and 25 seconds.

What is angina?

A) Angina is a symptom of reduced oxygen supply to the heart muscle, usually caused by narrowing or obstruction of the coronary artery.
B) Angina is a symptom of reduced oxygen supply to the heart muscle, usually caused by narrowing or obstruction of lung alveoli.
C) Angina is a symptom of too high oxygen supply to the heart muscle, usually caused by enlarged coronary arteries.
D) Angina is a symptom of reduced oxygen supply to the brain, usually caused by narrowing or obstruction of the coronary artery.

What are the main limits of short-term memory? It is:

1. very sensitive to interruptions and interference
2. difficult to access
3. limited in size
4. subject to a biochemical burn-in of information

A) 2, 3
B) 1, 3, 4
C) 2, 4
D) 1, 2, 3

Hyperventilation is:

A) a normal compensatory physiological reaction to a drop in partial oxygen pressure (i.e. when climbing a high mountain)
B) an accelerated heart frequency caused by an increasing blood pressure.
C) a reduction of partial oxygen pressure in the brain.
D) an accelerated heart frequency caused by a decreasing blood-pressure.

A pilot who smokes will loose some of his capacity to transport oxygen combined with haemoglobin. Which percentage of his total oxygen transportation capacity would he give away when he smokes one pack of cigarettes a day?

A) 20 - 25%
B) 5 - 8%
C) 0.5 - 2%
D) 12 - 18%

Barotrauma of the sinuses of the nose (aerosinusitis):

A) is caused by a difference in pressure existing between the sinus cavity and the ambient air.
B) is only caused by the flying sport, not by the diving sport.
C) is only caused by colds and their effects.
D) is an irritation of sinuses by abuse of nose sprays.

The normal rate of breathing of an adult at rest is about:

A) 16 cycles per minute.
B) 32 cycles per minute.
C) 4 cycles per minute.
D) 72 cycles per minute.

What is the average Time of Useful Consciousness after a rapid decompression at 40.000 ft?

A) More than 1 minute.
B) Between 20 seconds and 1 minute.
C) About 12 seconds.
D) About 40 seconds.

A human breathing 100% oxygen at 33,700 ft. is equivalent of breathing air at:

A) 8,000 ft
B) 10,000 ft
C) 21,300 ft
D) Sea Level

Blood from the pulmonary artery is?

A) Low in Oxygen and rich in carbon dioxide.
B) Rich in Oxygen and low in carbon dioxide.
C) Rich in Oxygen and rich in carbon dioxide.
D) Low in Oxygen and low in carbon dioxide.

TUC at 25.000 ft at rest is about:

A) 10 minutes.
B) 90 seconds.
C) 4 minutes.
D) 45 seconds.

The Time of Useful Consciousness may vary according to:

1. physical activity of the subjected crew
2. the experience of the pilot on the type of aircraft in question
3. the strength and time of decompression
4. the cabin temperature

A) 1, 3
B) 3, 4
C) 1, 2
D) 4

Signs or symptoms of hyperventilation are:

A) increased rate and depth of respiration.
B) all above mentioned signs or symptoms.
C) breathlessness, feelings of suffocation.
D) muscle twitching and tightness.

A Barotrauma of the middle ear (aerotitis):

A) is only caused by large pressure changes during climb.
B) is more likely, when the pilot is flying with a respiratory infection and during descent.
C) is to be expected during rapid decompressions, but an emergency descent immediately following the decompression will eliminate the problem.
D) causes severe pain in the sinuses.

The following actions are appropriate when faced with symptoms of decompression sickness:

1. climb to higher level
2. descent to the higher of 10000 ft or MSA and land as soon as possible
3. breathe 100 % oxygen
4. get medical advice about recompression after landing

A) 2, 3 and 4 are correct
B) 1, 2 and 3 are correct
C) 1 and 3 are correct
D) 1 and 4 are correct

A person should be able to overcome the symptoms of hyperventilation by:

A) Refraining from the use of alcohol and over-the-counter drugs such as antihistamines and tranquillisers.
B) Slowing the breathing rate and increasing the amount of carbon dioxide in the body.
C) Increasing the breathing rate, in order to increase ventilation.
D) A and C are correct.

361. How long TUC can be expected after a loss of cabin pressure at 37 000 feet?
A) 10 sec.
B) 18 sec.
C) 5 sec.
D) 15 sec.

Susceptibility to carbon monoxide poisoning, as from smoking tobacco, increases as:
A) altitude increases.
B) air temperature increases.
C) air pressure increases.
D) altitude decreases.

Hypoxia can occur because:
A) the percentage of oxygen is lower at altitude.
B) you inhale too much nitrogen.
C) you are hyperventilating.
D) you are getting too much solar radiation.

Henrys law states:
A) the volume of a gas is inversely proportional to its pressure.
B) the quantity of a gas dissolved in a liquid is inversely proportional to the pressure of the gas.
C) the quantity of a gas dissolved in a liquid is proportional to the partial pressure of the gas.
D) the quantity of a gas dissolved in a liquid is proportional to the temperature of the gas.

Carbon monoxide, a product of incomplete combustion, is toxic because:
A) it competes with oxygen in its union with haemoglobin.
B) it disturbs gaseous diffusion at the alveoli capillary membrane.
C) it prevents the excretion of catabolites in the kidneys.
D) it prevents the absorption of food from the digestive tract.

What can cause hypoxic hypoxia?
A) Hypoxic hypoxia results when there is interference with the use of O2 by body tissues. Alcohol, narcotics and certain poisons, such as cyanide, interfere with the cells ability to use an adequate supply of oxygen.
B) Insufficient oxygen in the air or a condition preventing diffusion of lung O2 to the bloodstream, caused by reduced ppO2 and most likely to be encountered at higher altitude.
C) Hypoxic hypoxia results when there is interference with the use of O2 by body tissues. Alcohol, narcotics and certain poisons, such as cyanide, interfere with the cells ability to use an adequate supply of oxygen, the oxygen-carrying capacity of the blood
D) Hypoxic hypoxia, also called self-imposed stress hypoxia, is an individuals physiological altitude (the altitude the body feels). Self-imposed stress factors, such as tobacco and alcohol, can cause hypoxic hypoxia.

The primary factor to control the rate and depth of breathing is the:
A) pressure of carbon dioxide in the blood.
B) partial pressure of oxygen in the blood.
C) total air pressure in the blood.
D) partial pressure of nitrogen.

The thin walls of capillaries are permeable for:
A) protein.
B) platelets.
C) red blood cells.
D) gases.

What could be symptoms of hypoxia (when flying without oxygen) above 12.000 ft?
A) Headache, fatigue, dizziness, lack of coordination.
B) Headache, thirst, somnolence, collapse.
C) Euphoria, headache, improvement in judgement, loss of consciousness.
D) Trembling, increase in body temperature, convulsions, slowing of the rate of breathing.

Which would most likely result in hyperventilation?
A) The excessive consumption of alcohol
B) Emotional tension, anxiety or fear
C) An extremely slow rate of breathing and insufficient oxygen
D) Diving within 24 hours before flying

The following statement about relative humidity is false:
A) during a long haul flight, relative humidity in the cockpit is very low.
B) man feel comfortable at a relative humidity of 60 ... 70%
C) if an air mass is warmed, its relative humidity increases.
D) if an air mass is cooled its relative humidity increases.

Which of the following measures can reduce the chance of a black-out during positive G-manoeuvres?
A) Hyperventilation
B) Breathing oxygen.
C) Sit in upright position and keep relaxed.
D) A tilt back seat.

Among the factors which affect acuity are:
A) Colour blindness, alcohol and angular distance from the fovea.
B) Smoking, colour blindness and angular distance from the fovea.
C) Hypoxia, age and angular distance from the fovea.
D) Colour blindness, visibility and angular distance from the fovea.

Ventilation is primarily stimulated by:
A) a decrease of argon.
B) an increase of carbon monoxide.
C) an increase of carbon dioxide.
D) a decrease of oxygen.

Which statement about partial pressure is correct?

A) Partial pressure of oxygen in air is always approximately 20.
B) The sum of the partial pressure of individual gases, in a mixture of gases, is equal to the total pressure.
C) One can calculate the partial pressure of a gas in a mixture by using Boyles law.
D) Partial pressure decreases approximately 2% per 1000 feet.

The partial pressure of carbon dioxide in the alveoli is:

A) higher than the pressure of carbon dioxide in the blood.
B) lower than in the blood.
C) almost the same as in the atmospheric air.
D) lower than the pressure of carbon dioxide in the atmospheric air.

Reducing the effects of radiation is normally achieved by:

A) layering.
B) recording of instrument readings and rostering.
C) thicker aircraft skins.
D) aircraft shields.

The total pressure of a mixture of gases is equal to the sum of the partial pressures of the gases which compose the mixture corresponds to:

A) Henrys law.
B) Daltons law.
C) Grahams law.
D) Boyle Mariottes law.

The symptoms caused by gas bubbles under the skin following a decompression are called:

A) bends.
B) leans.
C) chokes.
D) creeps.

The following situations can lead to stagnant hypoxia

A) reduced partial oxygen pressure due to high altitude
B) reduced number of healthy red blood cells
C) alcohol or drugs
D) excessive G forces

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381. Which one of the following signs distinguishes hypoxia from hyperventilation?

A) Sensory loss.
B) Cyanosis.
C) Headache.
D) Dizziness.

Which data compose the ICAO standard atmosphere?

1. Density
2. Pressure
3. Temperature
4. Humidity

A) 3, 4
B) 1, 2, 3
C) 2, 3, 4
D) 1, 2, 4

The following statement about UV radiation is false:

A) the risk to accumulate harmful UV radiation is higher at FL 450 than at sea level.
B) dark-skinned, black-haired, brown-eyed subjects are least sensitive to UV radiation.
C) light- skinned, blond, blue-eyed subjects are least sensitive to UV radiation.
D) the harmful effects of UV radiation depend on the type of skin of a subject.

When consciously breathing fast or hyperventilating due to high arousal or overstress, the carbon dioxide level in the blood is lowered, resulting in:

A) less oxygen to be diffused into the cells.
B) the activation of the respiratory centre, which in turn causes hypoxia.
C) a poor saturation of oxygen in the blood.
D) a delay in the onset of hypoxia when flying at high altitudes.

With reference to humidity:

1. 40 - 60% is optimal,
2. Cabin humidity is normally approx 30%,
3. Dehydration will affect crew performance,
4. Humidity has no effect on crew performance,

A) Only 3 is correct
B) 2 & 4 are correct
C) 1 & 4 are correct
D) 1,2 and 3 are correct

A Barotrauma of the middle ear is?

A) a bacterial infection of the middle ear.
B) an acute or chronic trauma of the middle ear caused by a difference of pressure on either side of the eardrum.
C) an infection of the middle ear caused by rapid decompression.
D) a dilatation of the Eustachian tube.

Which statement is correct?

A) The gradient of diffusion is higher at altitude than it is at sea-level.
B) The blood plasma is transporting the oxygen.
C) Oxygen diffusion from the lungs into the blood does not depend on partial oxygen pressure.
D) Oxygen diffusion from the blood into the cells depends on their partial oxygen pressure gradient.

The ozone layer is:

A) in the mesosphere.
B) in the troposphere.
C) at sea level.
D) in the stratosphere.

The volume percentage of oxygen in the atmosphere at 30.000 feet remains at 21%, but the partial pressure of oxygen:

A) decreases significantly with lower temperatures.
B) decreases with decreasing barometric pressure.
C) increases by expansion.
D) remains constant, independent from altitude.

Which of the following factors may have an influence on medical disqualification?

A) Low blood pressure only.
B) High and low blood pressure as well as a poor condition of the circulatory system.
C) High blood pressure only.
D) Blood pressure problems cannot occur in aircrew because they always can be treated by in-flight medication.

Inertia in the direction head => feet will cause the blood-pressure in the brain to:

A) first increase, then decrease
B) increase.
C) remain constant.
D) decrease.

Carbon monoxide in the human body can lead to:

1. loss of muscular power
2. headache
3. impaired judgement
4. pain in the joints
5. loss of consciousness

A) 1, 2, 3, 4 are correct.
B) 1, 2 , 3 and 5 are correct.
C) 1, 2 and 4 are correct.
D) 2 and 3 are correct, 1 is false.

At what altitude (threshold for compensatory reactions) does the human organism start with remarkable measures to compensate for the drop in PO2 when climbing? At about:

A) 10.000 - 12.000 ft
B) 6.000 - 7.000 ft
C) 8.000 - 9.000 ft
D) 9.000 - 10.000 ft

The following statements are false except:

A) a healthy subject has ~7.5 liters of blood.
B) blood consists of ~45% blood cells and ~55% blood plasma.
C) platelets are responsible for protection from infectious diseases.
D) blood plasma consists of leukocytes, erythrocytes and thrombocytes.

The statement: Adjacent gases of different concentration mix until the concentration is balanced:

A) is known as Henrys law.
B) is known as Diffusion law.
C) is known as Daltons law
D) is known as Charles law.

The severity of hypoxia depends on the:

1. rate of decompression
2. physical fitness
3. flight level
4. individual tolerance

A) 1, 2, 3 and 4 are correct.
B) 2,3 and 4 are correct, 1 is false.
C) 1, 2 and 3 are correct, 4 is false.
D) 1 and 3 are correct, 2 and 4 are false.

The symptoms of hyperventilation are easily confused with those of:

A) hypertension.
B) hypoxia.
C) hyperopia.
D) hypotension.

Decompression sickness symptoms may develop due to:

A) emergency descents after a cabin pressure loss.
B) cabin pressure loss when flying at higher altitudes (above 18000 FT).
C) sudden pressure surges in the cabin at altitudes below 18000 FT.
D) fast flights from a high-pressure zone into a low pressure area when flying an un-pressurized aeroplane.

Decompression sickness may occur as from:

1. an altitude of more than 18.000 ft
2. an altitude of more than 5.500 ft
3. a rate of climb of more than 500 ft/min exceeding 18.000 ft
4. a temperature of more than 24° C

A) 1, 3, 4
B) 2, 4
C) 2, 3
D) 1, 3

Which measure(s) will help to compensate hypoxia?

1. Descend below 10.000 FT.
2. Breathe 100 % oxygen.
3. Climb to or above 10.000 FT.
4. Reduce physical activities.

A) Only 1 is correct.
B) 1, 2 and 4 are correct.
C) 1 and 2 are correct, 3 and 4 are false.
D) 1, 2 and 3 are correct.

401. The following statement about ozone is false:

A) during a sunny day ozone is enriched more over industrial zones and urban areas.
B) during a sunny day ozone is enriched more over rural areas.
C) ozone impairs night vision.
D) ozone can cause lung irritation at a concentration of 1.0 ppm.

The following statement about UV radiation is false:

A) UVA penetrates deeply into the skin and causes sunburn.
B) UVC usually doesn' t reach the earth.
C) acute UV exposure can cause snow blindness.
D) UVB penetrates deeper into the skin than UVA and causes skin cancer.

Which of the following statements concerning Barotrauma are correct? They are:

A) more likely to occur during ascent then during a rapid descent.
B) caused by an increase in the partial pressure of oxygen associated with a decrease in altitude.
C) mainly associated with a sink rate which exceeds the ability of the body to balance its internal pressures.
D) due to pressure differentials between gases in hollow cavities of the body and the ambient pressure.

Which statement best defines hypoxia?

A) A state of oxygen deficiency in the body.
B) A condition of gas bubble formation around the joints or muscles.
C) A condition of too low CO2 level in the blood.
D) An abnormal increase in the volume of air breathed.

After a decompression to 43.000 ft the TUC (Time of Useful Consciousness) will be approximately:

A) 45-60 seconds.
B) 30-45 seconds.
C) 60-90 seconds.
D) 5-15 seconds.

Smoking cigarettes reduces the capability of the blood to carry oxygen. This is because:

A) carbon monoxide in the smoke of cigarettes assists diffusion of oxygen in the alveoli.
B) the smoke of one cigarette can cause an obstruction in the respiratory tract.
C) carbon monoxide increases the partial pressure of oxygen in the alveoli.
D) haemoglobin has a greater affinity for carbon monoxide than it has for oxygen.

The type of hypoxia, which occurs at altitude is a explained by:

A) Grahams law.
B) Henrys law.
C) Boyle Mariottes law.
D) Daltons law.

What is hyperventilation?

A) A reduction in the O2 carrying abilities of the blood.
B) Elevated arterial blood pressures, both systolic and diastolic.
C) A condition which prevents the diffusion of O2 from the lungs to the bloodstream.
D) Excessive rate and depth of respiration leading to abnormal loss of CO2 from the blood.

During final approach under bad weather conditions you are getting uneasy, feel dizzy and get tingling sensations in your hands. When hyperventilating you should:

A) descend.
B) apply the Valsalva method.
C) control your rate and depth of breathing.
D) use the oxygen mask.

A common phenomenon of hypoxia and hyperventilation is:

A) shortness of breath.
B) hypotension of the muscles.
C) impaired judgment and self criticism.
D) tingling sensation of arms and legs.

The time of useful consciousness without oxygen at an altitude of 25 000 ft is:

A) 45 to 75 seconds
B) 2 to 3 minutes
C) 12 seconds
D) 30 minutes

The symptoms of hyperventilation are caused by a:

A) surplus of O2 in the blood.
B) surplus of CO2 in the blood.
C) shortage of CO in the blood.
D) shortage of CO2 in the blood.

The atmospheric pressure:

A) increases about exponentially with increasing altitude.
B) decreases about exponentially with increasing altitude.
C) is constant up to about 100 km.
D) decreases linearly from sea level up to the tropopause.

The pressure at 18 000 ft is lower than at sea level. How much lower is it approximately?

A) 1/2.
B) 1/3.
C) 75% of the pressure at sea level.
D) 1/4.

What is the TUC at 18.000 FT?

A) about 30 minutes.
B) about 50 minutes
C) about 90 minutes
D) about 10 minutes

The negative (radial) acceleration of an airplane affects the sitting pilot with inertia along:

A) the transverse body axis to the left.
B) the transverse body axis to the right.
C) the vertical body axis upwards.
D) the vertical body axis downwards.

What are the main clinical signs of hypoxia during explosive decompression?

A) Headaches, fatigue, somnolence, palpitations.
B) Increase in heart and respiratory rates, euphoria, impairment of judgement, memory disorders.
C) Headaches, articular pain, speeding-up of the respiratory rate, memory disorders.
D) Increase in heart rate, decrease in body temperature impairment of judgement.

Cardiac output is:

A) stroke volume plus the pulse rate and is normally 5.0 - 5.5 litres a minute.
B) stroke volume minus the pulse rate and is normally 5.0 - 5.5 litres a minute.
C) stroke volume times the pulse rate and is normally 5.0 - 5.5 litres a minute.
D) stroke volume divided by the pulse rate and is normally 5.0 - 5.5 litres a minute.

What are the main components of the respiratory system?

A) Oral-nasal passage, pharynx, larynx, lungs, capillaries and alveoli.
B) Oral-nasal passage, pharynx, larynx, trachea, capillaries and alveoli.
C) Oral-nasal passage, pharynx, larynx, trachea, bronchi and alveoli.
D) Oral-nasal passage, pharynx, larynx, lungs, bronchi and alveoli.

The blood-pressure depends on:

1. the work of the heart
2. the peripheral resistance
3. the elasticity of the arterial walls
4. the blood volume and viscosity

A) 1, 2 and 3 are correct, 4 is false.
B) 1, 3 and 4 are correct, 2 is false.
C) 2, 3 and 4 are correct, 1 is false.
D) 1, 2, 3 and 4 are correct.

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421. Hypoxia can be caused by:

1. low partial pressure of oxygen in the atmosphere when flying at high altitudes without pressurisation and supplemental oxygen
2. a decreased saturation of oxygen in the blood due to carbon monoxide attached to the haemoglobin
3. blood pooling in the lower extremities due to inertia (+Gz)
4. malfunction of the body cells to metabolize oxygen (i.e. after a hangover)

A) 1 and 2 are correct, 3 and 4 are false.
B) 1, 2, 3 are correct, 4 is false.
C) 1 is false, 2, 3 and 4 are correct.
D) 1, 2, 3 and 4 are correct.

The following occurs in man if the internal body temperature increases to 38° C:

A) considerable dehydration.
B) apathy.
C) impairment of physical and mental performance.
D) nothing significant happens at this temperature. The first clinical signs only start to appear at 39° C.

The most dangerous symptoms of hypoxia at altitude are:

A) breathlessness and reduced night vision.
B) sensation of heat and blurred vision.
C) hyperventilation.
D) euphoria and impairment of judgement.

The circulatory system, among other things, allows for:

1. transportation of oxygen and carbon dioxide
2. transportation of information by chemical substances

A) both are false.
B) 1 is correct and 2 is false.
C) 1 is false and 2 is correct.
D) 1 and 2 are correct.

In the pulmonary artery there is:

A) oxygen rich and carbon dioxide rich blood.
B) oxygen poor and carbon dioxide rich blood.
C) oxygen rich and carbon dioxide poor blond.
D) oxygen poor and carbon dioxide poor blood.

Which of the following could a pilot experience when he is hyperventilating?

1. Dizziness
2. Muscular spasms
3. Visual disturbances
4. Cyanosis

A) 1,2 and 4 are correct, 3 is false
B) 1,2 and 3 are correct, 4 is false
C) 1 is false, all others are correct
D) 2 and 4 are false

Pain in the Joints (bends), which suddenly appear during a flight, are symtoms of:

A) air-sickness.
B) hypoxia.
C) Barotrauma.
D) decompression sickness.

Which statement applies to hypoxia?

A) it is possible to prognosis when, how and where hypoxia reaction starts to set in.
B) you may become immune to hypoxia when exposed repeatedly to hypoxia.
C) carbon monoxide increases the tolerance of the brain to oxygen deficiency.
D) sensitivity and reaction to hypoxia varies from person to person.

A balloon with 10 litres of air is brought from mean sea level up to 34.000 feet. What is the volume of the balloon at this altitude, provided the temperature is kept constant?

A) 50 litres
B) 40 litres
C) 2.5 litres
D) 10 litres

Normal cabin pressure is:

A) 6,000 - 8,000 ft
B) 5,000 ft
C) 10,000 ft
D) 3,000 - 4,000 ft

Records of radiation are normally kept for flights above:

A) 55,000 feet.
B) 49,000 feet.
C) 45,000 feet.
D) 40,000 feet.

Blood-pressure depends on:

1. the cardiac output
2. the resistance of the capillaries (peripheral resistance)

A) 1 is correct 2 is false.
B) 1 and 2 are correct.
C) 1 and 2 are both false.
D) 1 is false 2 is correct.

You can survive at any altitude, provided that:

A) the temperature in the cabin does not drop below 10° C.
B) 21% oxygen is available in the air you breath in.
C) pressure respiration is guaranteed for that altitude.
D) enough oxygen, pressure and heat is available.

Decompression sickness can be prevented by:

1. avoiding cabin altitudes above 18.000 ft
2. maintaining cabin pressure below 8.000ft when flying at high altitudes
3. performing physical exercises before and during the flight
4. breathing 100 % oxygen for 30 min prior and during the flight

A) 2 and 3 are correct, 4 is false.
B) 1, 2 and 3 are correct.
C) 1, 2 and 4 are correct.
D) only 3 is correct.

Flying at pressure altitude of 10 000 ft, a pilot, being a moderate to heavy smoker, has an oxygen content in the blood equal to an altitude:

A) of 10 000 FT.
B) of 15000 FT when breathing 100% oxygen.
C) lower than 10 000 FT.
D) above 10 000 FT.

Decompression sickness occurs in association with exposure to reduced atmospheric pressure. The evolution of bubbles of nitrogen coming out of solution in body tissues can be derived from:

A) Boyle Mariottes law.
B) Gay Lussacs law.
C) Dalton law.
D) Henrys law.

Hypoxia is the result of:

A) Excessive nitrogen in the bloodstream.
B) Decreasing amount of oxygen as your altitude increases.
C) Both A and B are correct.
D) High barometric pressure at higher altitudes.

You climb from 0 to 50.000 ft and measure the decrease of the pressure per 5.000 ft. The absolute difference in barometric pressure is greatest between:

A) 10.000ft and 15.000 ft.
B) 0 ft and 5.000 ft.
C) 5.000 ft and 10.000 ft.
D) 45.000 ft and 50.000 ft.

Among the symptoms of hypoxia are:

1. Impaired judgement and euphoria.
2. Fast and heavy breathing.
3. Impairment of vision.
4. Muscular impairment.

A) 1, 2, 3 and 4
B) 1, 3 and 4
C) 1, 2 and 4
D) 1 & 3

What is meant by Barotrauma?

A) Toothache due to increase in ambient pressure.
B) A situation where the oxygen partial pressure has decreased to a certain low level.
C) Trapped gases inside your body create pain as ambient pressure decreases.
D) Trapped gases inside your body create pain as cabin altitude decreases.

---

441. How does CO affect O2 carriage in the blood?

A) By killing red blood cells.
B) By splitting the O2 into CO2
C) By killing white blood cells.
D) By binding to the haemoglobin before O2 does.

Of the following alternatives, which objective effects are due to positive acceleration (+ Gz)?

1. Decrease in heart rate
2. Pooling of blood into lower parts of the body
3. Drop in blood pressure above heart-level
4. Downward displacement or deformation of soft or mobile organs

A) 2,3,4
B) 1
C) 1,3,4
D) 1,2,3

TUC (Time of Useful Consciousness) is:

A) the time between the start of hypoxia and death.
B) the length of time during which an individual can act with both mental and physical efficiency and alertness; measured from the moment at which he is exposed to hypoxia.
C) the time before becoming unconscious at a sudden pressure loss.
D) the time after pressure loss until decompression sickness sets in.

After a decompression at high altitude:

A) nitrogen gas bubbles can be released in the body fluids causing gas embolism; bends and chokes.
B) pressure differentials will suck air into the cabin.
C) temperature in the cockpit will increase.
D) automatically oxygen is deployed into the cabin.

The respiratory control centre is primarily sensitive to:

A) carbon dioxide.
B) oxygen.
C) argon.
D) carbon monoxide.

What is the procedure above 10.000 ft altitude when faced with explosive decompression:

A) Don an oxygen mask and descend to below 10.000 ft.
B) First inform ATC.
C) Check the cabin altitude, don an oxygen mask and maintain level flight.
D) Descend to below 10.000 ft and signal an emergency.

A symptom comparison for hypoxia and hyperventilation is:

A) symptoms caused by hyperventilation will immediately vanish when 100% oxygen is given.
B) cyanosis (blue colour of finger-nail and lips) exists only in hypoxia.
C) altitude hypoxia is very unlikely at cabin pressure altitudes above 10.000 ft.
D) there are great differences between the two.

The effects of Boyles law can cause:

A) Trapped gas disorders.
B) Hypoxia.
C) Evolved gas disorders.
D) Bends.

Large amounts of carbon dioxide are eliminated from the body when hyperventilating. This causes the blood

A) to become more alkaline increasing the amount of oxygen to be attached to the haemoglobin at lung area
B) to turn more acid thus eliminating more oxygen from the haemoglobin
C) to accelerate the oxygen supply to the brain
D) not to change at all

Man and Environment:

Which part of the vestibular apparatus is affected by changes in gravity and linear acceleration?
A) The Eustachian tube.
B) The semicircular canals.
C) The sacculus and utriculus.
D) The cochlea.

During a night flight at 10.000 feet you notice that your acuity of vision has decreased. In this case you can increase your acuity by:
A) breathing extra oxygen through the oxygen mask.
B) scanning sectors of the field of vision.
C) closing one eye.
D) dim the instrument lights.

Empty field myopia is caused by:
A) lack of distant focal points.
B) flying over mountainous terrain.
C) ozone at altitude.
D) atmospheric perspective.

Rising the perceptual threshold of a sensory organ means:
A) a lesser sensitivity.
B) a lesser selectivity.
C) a greater selectivity.
D) a greater sensitivity.

How can spatial disorientation in IMC be avoided? By:
A) looking outside whenever possible ignoring the attitude indicator.
B) believing your body senses only.
C) moving the head into the direction of the resultant vertical.
D) maintaining a good instrument cross check.

The optic nerve has a covering of:
A) cones.
B) a mixture of rods and cones.
C) rods.
D) does not consist of either rods or cones.

Which of the following statement(s) is/are correct?
1. The retina has rods on its peripheral zone and cones on its central zone.
2. The retina has cones and the crystalline lens has rods.
3. The rods allow for night-vision.
4. The cones are located on the peripheral zone of the retina.

A) 4
B) 1
C) 1, 3
D) 2, 3

The semicircular canals of the inner ear monitor:

A) movements with constant speeds.
B) gravity.
C) angular accelerations.
D) relative speed and linear accelerations.

The auditory nerve leads directly to the:

A) Cortex.
B) Semi-circular canals.
C) Cochlea.
D) Otoliths.

If you are disorientated during night flying you must:

A) relay on instruments.
B) check your rate of breathing - do not breathe too fast.
C) descend.
D) look outside.

When flying through a thunderstorm with lightning you can protect yourself from flashblindness by:

a. turning up the intensity of cockpit lights
b. looking inside the cockpit
c. wearing sunglasses
d. using face blinds or face curtains when installed

A) c) and d) are correct, a) and b) are false
B) a) and b) are correct, c) and d) are false
C) a), b) and c) are correct, d) is false
D) a), b), c) and d) are correct

Excessive exposure to noise damages:

A) the eardrum.
B) the sensitive membrane in the cochlea.
C) the semi circular canals.
D) the ossicles.

The PNS passes information from:

A) the brain to the sensory stores through sensory nerves.
B) the brain to all parts of the body through sensory nerves.
C) the brain to all parts of the body through sensory and motor nerves.
D) sensory inputs to the CNS through sensory and motor nerves.

The best way to cope with Motion Sickness is to:

A) swallowing.
B) moving the jaw from side to side
C) blow hard while holding the nose.
D) keep the head still if possible.

The proprioceptive senses (Seat of-the-Pants-Sense):
A) can be used, if trained, to avoid spatial disorientation in IMC
B) give wrong information, when outside visual reference is lost
C) can neither be used for motor coordination in IMC and VMC
D) is a natural human instinct, always indicating the correct attitude

Hypoxia will effect night vision:
A) at 5000 ft.
B) and causes the autokinetic phenomena.
C) and causes hyperventilation.
D) less than day vision.

Sound waves are transferred from the outer ear to the inner ear by:
A) the static organ.
B) the ossicles.
C) the cochlea.
D) the otolith organ.

A pilot approaching an upslope runway:
A) establishes a slower than normal approach speed with the risk of stalling out.
B) is performing a steeper than normal approach, landing long.
C) establishes a higher than normal approach speed.
D) may feel that he is higher than actual. This illusion may cause him to land short.

Tuned resonance of body parts, distressing the individual , can be caused by:
A) angular velocity.
B) vibrations from 16 Hz to 18 kHz
C) acceleration along the longitudinal body axis.
D) vibrations from 1 to 100 Hz.

Messages are sent through the nervous system by...
A) Chemical only.
B) Chemical and hormonal.
C) Electrical and hormonal.
D) Electrical and chemical.

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21. Optic Barotrauma is normally worse
A) During the ascent.
B) In all the above.
C) In level flight.
D) During the descent.

The vestibular organ:

A) gives the impression of hearing
B) reacts to linear/angular acceleration and gravity
C) reacts to pressure changes in the middle ear
D) reacts to vibrations of the cochlea

The risk of getting a spatial disorientation is growing, when:

A) there is contradictory information between the instruments and the vestibular organs.
B) the pilot is buckled too tight to his seat and cannot sense the attitude changes of the aircraft by his Seat-of- the-Pants-Sense.
C) information from the vestibular organ in the inner ear are ignored.
D) the pilot is performing an effective instrument cross-check and is ignoring illusions.

The ability of the lens to change its shape is called:

A) binocular vision.
B) depth perception.
C) adaptation.
D) accommodation.

Starting a coordinated level turn can make the pilot believe to:

A) increase the rate of turn into the same direction.
B) descent.
C) turn into the opposite direction.
D) climb.

How should you scan for other traffic at night?

A) Look to the side of the object and scan rapidly.
B) Look to the side of the object and scan slowly.
C) Look above or below the object and scan rapidly.
D) Scan the visual field very rapidly.

Visual disturbances can be caused by:

1. hyperventilation
2. hypoxia
3. hypertension
4. fatigue

A) 2, 3 and 4 are correct.
B) 1, 2, 3 and 4 are correct.
C) 1, 2 and 4 are correct.
D) 1, 2 and 3 are correct.

The part(s) of the eye responsible for night vision:

A) are the cones.
B) are rods and cones.
C) is the cornea.
D) are the rods.

How can a pilot prevent pilots-vertigo?

A) Practise an extremely fast scanning technique using off-centre vision.
B) Use the autopilot and disregard monitoring the instruments.
C) Maintain orientation on outside visual references as long as possible and rely upon the senses of balance.
D) Avoid steep turns and abrupt flight manoeuvres and maintain an effective instrument cross check.

When a pilot is staring at an isolated stationary light for several seconds in the dark he might get the illusion that:

A) the light is moving.
B) the intensity of the light is varying.
C) the colour of the light is varying.
D) the size of the lights varying.

When a pilot looks at a near object, the:

A) lens flattens
B) cornea becomes more curved
C) pupil becomes smaller
D) cornea changes shape

The Eustachian tube serves for the pressure equalization between:

A) sinuses of the nose and external atmosphere
B) frontal, nose and maxillary sinuses.
C) middle ear and external atmosphere.
D) nose and pharyngeal cavity and external atmosphere.

Which of the following components belong to the middle ear?

A) Otoliths.
B) Semicircular canals.
C) Ossicles.
D) Endolymph.

We know that transverse accelerations (Gy):

1. are above all active in turns and pull-outs
2. are present during take-off and landing
3. are rare during routine flights
4. often lead to loss of consciousness

A) 3
B) 1,4
C) 2,3
D) 1,2,3

What sound intensity represents the threshold of pain:

A) 170 dB.
B) 140 dB.
C) 115 dB.
D) 95 dB.

All pilots are going to suffer some hearing deterioration as part of the process of growing old. The effects of aging:

A) are to cut out all tones equally.
B) are to cut out the high tones first..
C) are to cut out the low tones first.
D) will not affect a pilot's hearing if he is wearing ear-plugs all the time.

Linear acceleration when flying straight and level in IMC may give the illusion of:

A) descending.
B) spinning.
C) climbing.
D) yawing.

What is referred to as stereoscopic vision?

A) The ability to focus both eyes on a single object.
B) The lack of ability to focus both eyes on a single object.
C) Motion parallax.
D) Apparent foreshortening.

Glaucoma is:

A) disturbed adaptation.
B) disturbed colour vision.
C) disturbed night vision.
D) high intra-ocular pressure.

What does the proprioceptive system do?

A) Sense the movements that have to the term seat-of-the-pants flying.
B) Sense yaw motion.
C) React to sensation from pressure on skin, joints and muscles.
D) Both A and C are correct.

---

41. What is the main problem caused by positive (+Gz) accelerations?

A) A pooling of blood in the lower portions of the body, and hence less blood available.
B) Hyperoxygenation of the blood which may lead to sensory disorders.
C) An improvement of peripheral vision.
D) An increase in blood pressure in the upper part of the body (above heart-level).

Flying a coordinated level turn will:

A) make the seat-of-the-pants sense feel a decreased pressure along the body’ s vertical axis.
B) make the body’ s pressure receptors feel an increased pressure along the body’ s vertical axis.
C) first give the impression of climb , then the impression of descent.
D) make the blood being pooled in the head.

The available cognitive resources of the human brain:

A) are virtually unlimited.
B) are limited but make it possible to easily perform several tasks at the same time.
C) allow for twin-tasks operation without any loss of effectiveness.
D) are limited and make it impossible to perform two intentional tasks at the same time.

What is understood by air-sickness?

A) An illness caused by evaporation of gases in the blood.
B) A sensory conflict within the vestibular system accompanied by nausea, vomiting and fear.
C) An illness caused by reduced air pressure.
D) An illness caused by an infection of the middle ear.

Positive linear acceleration when flying in IMC may cause a false sensation of:

A) apparent sideward movement of objects in the field of vision.
B) pitching up.
C) pitching down.
D) vertigo.

Aircrew sunglasses

A) should possess reasonable luminance
B) straighten the light beams
C) absorb colour
D) supply protection for UV and IR

Below are four statements about rods and cones. Which one is true?

A) Rods are sensitive to colour and small details.
B) Rods are concentrated around the fovea.
C) Cones are effective in both daylight and darkness.
D) Cones give the best visual acuity

What impression do you have when outside references are fading away (e.g. fog, darkness, snow and vapour)?

A) Objects seem to be much bigger than in reality
B) It is difficult to determine the size and speed of objects
C) Objects seem to be closer than in reality
D) There is no difference compared with flying on a clear and sunny day

A pilot is used to land on wide runways only. When approaching a smaller and/or narrower runway, the pilot may feel he is at a:

A) greater height and the impression of landing short.
B) lower height and the impression of landing slow.
C) greater height than he actually is with the tendency to land short.
D) lower than actual height with the tendency to overshoot.

What are vestibular illusions?

A) Both A and B are correct.
B) The vestibular system may function incorrectly in flight and cause false impressions or microceptions.
C) Pressure difference in the middle and outer ear.
D) Adverse change in angular acceleration or velocity in the fluid in the Eustachian tube.

A shining light is fading out (i. e. when flying into fog, dust or haze). What kind of sensation could the pilot get?

A) The light source will make the pilot believe, that he is climbing.
B) The source of light is approaching him with increasing speed.
C) The source of light moves away from him.
D) The source of light stands still.

What should a pilot do if a passenger shows signs of airsickness?

A) Encourage him or her to look out of the window at a fixed, definite object such as the horizon, faraway clouds, or a distant object on the ground is suitable.
B) All of the above are correct.
C) Encourage him or her to read a magazine, book etc., and try not to worry about the surroundings.
D) Never allow any passengers to fly if they have taken motion sickness medications.

Which of the following illusions are brought about by conflicts between the visual system and the vestibular system?

1. Illusions concerning the attitude of the aircraft
2. Autokinetic illusion (fixed point viewed as moving)
3. Illusions when estimating the size and distance of objects
4. Illusions of rotation

A) 2
B) 3,4
C) 2,3,4
D) 1,4

Which part of the eye carries out 70 - 80% of the focussing of the eye?

A) The cornea.
B) The fovea.
C) The iris.
D) The lens.

The following statements are true except:

A) cones are most densely in the fovea centralis and have a one-to-one connection to the brain.
B) cones are responsible for night vision and are most densely in the fovea centralis.
C) rods are responsible for night vision and have a poor ability to discriminate.
D) rods are responsible for ambient vision and are in groups connected to the brain.

The so-called Coriolis effect (a conflict in information processing in the brain) in spatial disorientation occurs:

A) on stimulating the cochlea intensely.
B) when no semicircular canal is stimulated.
C) on stimulating several semicircular canals simultaneously.
D) on stimulating the saccule and the utricle of the inner ear.

Apnoea is:

A) A cessation of breathing whilst asleep.
B) An inability to stop falling asleep when in sleep credit.
C) Sleepwalking.
D) An inability to stop falling asleep when in sleep debit.

Pilots vertigo.

A) Is the sensation of climbing caused by a strong linear acceleration.
B) Is the sensation to keep a rotation after completing a turn.
C) Announces the beginning of airsickness.
D) Is the condition of dizziness and/or tumbling sensation caused by contradictory impulses to the central nervous system (CNS).

The optic system of the eye consists of:

A) cornea, lens, vitreous humor.
B) uvea, sclera, retina.
C) rods, cones, fovea centralis.
D) retina, optic nerve, blind spot.

The group of tiny bones (the hammer, anvil and stirrup) are situated in:

A) the outer ear.
B) the maxillary sinus.
C) the middle ear.
D) the inner ear.

---

61. During flight in IMC, the most reliable sense which should be used to overcome illusions is the:

A) visual sense, interpreting the attitude indicator.
B) vestibular sense.
C) seat-of-the-pants-sense.
D) visual sense by looking outside.

A pilot, accelerating or decelerating in level flight may get:

A) the illusion to turn
B) the feeling of rotation
C) the illusion of climbing or descending
D) the impression of stationary objects moving to the right or left

Visual perception of depth at close to medium distance is primarily due to:

A) the high sensitivity of the retina.
B) interactions between cones and rods.
C) peripheral vision.
D) binocular vision.

Why does a deficiency in vitamin A cause night-blindness?

A) Accommodation is destroyed.
B) Vitamin A deficiency interrupts the oxygen supply to the photosensitive cells.
C) The transfer of light stimulus from the rods to a nerve impulse depends on vitamin A.
D) Vitamin A is essential to the regeneration of visual purple,

Which of the following symptoms can mark a beginning hyperventilation?

A) Slow rate of breathing.
B) Dizzy feeling.
C) Slow heart beat.
D) Cyanosis (blueing of lips and finger nails).

During sustained positive G-forces the order of symptoms you can expect is:

A) unconsciousness, black-out, tunnel vision and grey out.
B) grey-out, unconsciousness, black-out and tunnel vision.
C) grey-out, tunnel vision, black-out and unconsciousness.
D) black-out, grey-out, tunnel vision and unconsciousness.

One of the causes of Conductive Deafness is:

A) hypertension,
B) a blow on the head with subsequent damage to the ossicles.
C) age.
D) long exposures to levels of noise in excess of 90 dbs.

The human ear is capable of perceiving vibrations between the frequencies

A) 0 - 16 Hz
B) 20,000 - 40,000 Hz
C) 30 - 15000 dB
D) 16 - 20,000 Hz

The time required for complete adaptation is:

A) for day and night: 30 min.
B) for high levels of illumination 10 sec and for full dark adaptation 30 min.
C) for night 10 sec and for day 30 min.
D) for high levels of illumination 10 minutes and for low levels of illumination 30 minutes.

What is the name for the sensation of rotation occurring during flight and which is caused by multiple irritation of several semicircular canals at the same time?

A) Graveyard spin
B) Seat-of-the-Pants illusions.
C) Pilots Vertigo.
D) Sudden incapacitation

The lens is responsible for approximately ... of the total focussing ability.

A) 20% - 30%
B) 98%
C) 50%
D) 70% - 80%

Which part of the body acts as a reflex centre for the co-ordination of equilibrium?

A) The brain stem.
B) The Fovea.
C) The cerebrum.
D) The cerebellum.

Disorientation is more likely to occur when the pilot is:

1. flying in IMC
2. frequently changing between inside and outside references
3. flying from IMC into VMC
4. having a cold

A) 2, 3 and 4 are correct
B) 1, 3 and 4 are correct
C) 1, 2 and 4 are correct
D) 1, 2 and 3 are correct

What is the purpose of the semicircular canals?

A) Both A and C are correct.
B) Transform sound to nerve impulses.
C) Sense linear (vertical) acceleration and gravity.
D) Sense angular acceleration.

Dizziness and tumbling sensations, when making head movements in a tight turn, are symptoms of:

A) licker-vertigo.
B) Nystagmus.
C) Pilots vertigo.
D) Oculogravic illusion.

Pilots vertigo:

A) the impression of climbing when banking.
B) is a sensation of rotation during flight due to multiple irritation of several semicircular canals at the same time.
C) the impression of flying straight and level while the aircraft is spinning.
D) a sudden loss of visual perception during flight due to multiple irritation of the utriculus and sacculus at the same time.

What is the purpose of the otolith organs?

A) Transform sound to nerve impulses.
B) Both A and C are correct.
C) Sense linear (vertical) acceleration and gravity.
D) Sense angular acceleration.

What misjudgement may occur if an airplane is flying into, fog, snow or haze?

A) Objects seem to move slower than in reality.
B) Objects will appear bigger in size than in reality.
C) Objects seem to be farther away than in reality.
D) Objects will appear closer than they really are.

Among the factors that increase tolerance to long-duration g forces are:

A) Correct use of pilot's harness and tensing of abdominal muscles.
B) Tensing the leg muscles and correct use of pilot's harness.
C) Anti-g suits and correct use of pilot's harness.
D) Bending forward or supine body position and tensing of abdominal muscles.

The Stroboscopic Effect can cause:

A) Blindness.
B) Fits.
C) Colour blindness.
D) Paralysis.

---

81. The proprioceptive senses (seat-of-the-pants sense) are important for motor coordination. They:

A) indicate the difference between gravity and G-forces.
B) are important senses for flight training in IMC.
C) are completely unreliable for orientation when flying in IMC.
D) allow the pilot to determine the absolute vertical at flight condition.

To optimise ones night-vision performance, it is necessary:

1. to spend some time getting adapted to low levels of illumination
2. to increase the instrument panel lighting by reducing the cockpit lighting
3. not to focus on the point to be observed
4. to avoid blinding

A) 2
B) 1, 3, 4
C) 1, 2, 4
D) 2, 3, 4

When the visual image is focussed in front of the retina the condition is:

A) Aerodantalgia.
B) Myopia.
C) Presbycusis.
D) Hypermetropia.

Depth perception when objects are close (< 1 m) is achieved through:

A) seeing with two eyes (binocular vision).
B) good visibility only.
C) the blind spot at the retina.
D) visual memory only.

What do you do, when you are affected by pilots vertigo?

1. Establish and maintain an effective instrument cross-check.
2. Believe the instruments.
3. Ignore illusions.
4. Minimize head movements.

A) 1, 2 and 3 are correct, 4 is false.
B) Only 4 is false.
C) 1, 2, 3 and 4 are correct.
D) 1 and 2 are correct, 3 and 4 are false.

What can a pilot do to avoid Flicker vertigo when flying in the clouds?

A) Switch strobe-lights off.
B) Fly straight and level and avoid head movements.
C) Dim the cockpit lights to avoid reflections.
D) Engage the autopilot until breaking the clouds.

Which problem may occur, when flying in an environment of low contrast (fog, snow, darkness, haze)? Under these conditions it is:

A) improbable to get visual illusions.
B) difficult to estimate the correct speed and size of approaching objects.
C) impossible to detect objects.
D) no problem to estimate the correct speed and size of approaching objects.

One of the waste products of the metabolic process in the cell is:

A) sugar.
B) water.
C) fat.
D) protein.

The intensity of a sound is measured in:

A) hertz.
B) decibels.
C) cycles per second.
D) curies.

How many words can we hear and speak per minute?

A) Listen to 125 and speak 900.
B) Listen to 700 and speak 500.
C) Listen to 900 and speak 125.
D) Speak 500 and listen to 700.

Without visual reference, what illusion could the pilot get, when he is stopping the rotation to recover from a spin? He will get the illusion of:

A) climbing and turning into the original direction of the spin.
B) spinning into the opposite direction.
C) spinning into the same direction.
D) straight and level flight.

How can a pilot prevent spatial disorientation in flight?

A) Rely on the kinaesthetic sense.
B) Rely on good situational awareness believing your natural senses.
C) Establish and maintain a good instrument cross check.
D) Always try to catch outside visual cues.

The nervous system cells are capable of:

A) Both A and C are correct.
B) Efficient and rapid activity.
C) Stimulating the rate of cognition.
D) Slow generalised activity.

The semicircular canals monitor:

A) gravity.
B) relative speed.
C) angular accelerations.
D) horizontal and vertical accelerations.

Which sensations does a pilot get, when he is rolling out of a coordinated level turn?

A) Flying straight and level.
B) Climbing.
C) Descending and turning into the opposite direction.
D) Turning into the original direction.

With vertigo the instrument-panel seems to tumble . This is due to

A) oxygen deficiency
B) conflicting information between the semicircular canals and the tympanic membrane
C) the Coriolis effect in the semicircular canals
D) tuned resonance caused by vibration

The three coats of the eye are:

A) optic nerve, retina, blind spot.
B) ciliary body, iris, pupil.
C) sclera, uvea, retina.
D) cornea, lens, vitreous humor.

The Seat-of-the-Pants Sense is including receptors in the:

A) semicircular canals.
B) muscles, tendons and joints sensitive to the position and movement of body parts.
C) skin of the breech only.
D) utriculus and sacculus.

Perceptual conflicts between the vestibular and visual systems are:

1. classic and resistant when flying in IMC
2. sensed via impressions of rotation
3. sensed via distorted impressions of the attitude of the aircraft
4. considerable during prolonged shallow turns under IMC

A) 1,3
B) 1,2,3,4
C) 3,4
D) 2,3,4

What technique should a pilot use to scan for traffic to the right and the left during straight and level flight?

A) Systematically focus on different segments of the sky for short intervals.
B) Concentrate on moving objects until identified
C) Concentrate on relative movement detected in the peripheral vision area.
D) Continuous sweeping of the windshield right to left.

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101. To prevent the autokinetic phenomena, the following can be done:

A) look sideways to the source of light for better fixation.
B) turn down cabin light and shake head simultaneously.
C) look out for additional references inside and/or outside the cockpit using peripheral vision also.
D) fixate the source of light, first with one eye, then with the other.

Why are the eyes more sensitive (better night vision), after 30 - 45 minutes in a dark environment?

A) For night vision to take place, visual purple must build up in the rods.
B) Light bleaches out visual purple (rhodopsin).
C) B and C are correct.
D) The pupil is expanded and the lodopsin level is increased, improving night sensitivity.

The mechanism of accommodation is caused by:

A) the elasticity of the optic nerves.
B) the functioning of the ciliary muscle around the lens.
C) the diameter of the pupil.
D) the functioning of the muscles of the eye.

Among the factors which affect night vision are:

A) Age, cabin altitudes above 8.000 ft, smoking, alcohol and lack of vitamin D.
B) Age, cabin altitudes above 8.000 ft, smoking, alcohol and lack of vitamin C.
C) Age, cabin altitudes above 8.000 ft, smoking, alcohol and lack of vitamin C.
D) Age, cabin altitudes above 8.000 ft, smoking and alcohol.

The kinaesthetic sense does not orient an individual to his surroundings, but informs him of:

A) the condition in the body itself.
B) our surroundings.
C) the relative motion and relative position of his body parts.
D) a touch on the skin.

The otoliths in the inner ear are sensitive to:

A) angular speed.
B) linear acceleration and gravity.
C) constant speed only.
D) angular acceleration.

The ANS is a biological control system which is neuro-hormonal and is not self-regulating in normal circumstances.

A) This is not true - it is self-regulating
B) This is true
C) This is not true since this describes the Automatic Nervous System
D) This is not true - it is just hormonal

If you are subjected to an illusion during night flying you should:

A) continue on instruments.
B) can the surroundings.
C) use your oxygen mask.
D) dim the cockpit lighting.

Trapped gas disorders of the ears can be caused by:

A) Flying at too high altitude without supplemental oxygen.
B) Flying when you have a cold.
C) Flying after deep scuba diving with decompression.
D) Too hard equalisation of the pressure in you outer ear.

The inner ear is able to perceive:

1. angular acceleration
2. linear acceleration
3. noise

A) 2 is correct, 1 and 3 are both false.
B) 2 and 3 are correct, 1 is false.
C) 1 and 2 and 3 are correct.
D) 1 and 2 are correct, 3 is false.

Orientation in flight is accomplished by:

1. eyes
2. utriculus and sacculus
3. semicircular canals
4. seat-of-the-pants-sense

A) only 1 and 4 are correct.
B) 2, 3 and 4 are correct , 1 is false.
C) 2, 3 and 4 are false, only 1 is correct.
D) 1, 2, 3 and 4 are correct.

The refractive power of the lens is:

A) variable from 16 to 30 D.
B) about 43 D.
C) variable from 43 to 60 D.
D) about 30 D.

Angular accelerations are perceived by:

A) the receptors in the skin and the joints.
B) the semi circular canals.
C) the otholits.
D) the cochlea.

The physiological effects of accelerations to the human body depend on:

1. the duration of the G-forces
2. the onset rate of the G-forces
3. the magnitude of the G-forces
4. the direction of the G-forces

A) 1, 2, 3 are correct, 4 is false
B) 1 and 4 are correct, 3 is false.
C) 2, 3 and 4 are correct, 1 is false.
D) 1, 2, 3 and 4 are correct.

List the brains most important parts:

A) Fovea, cerebrum, cerebellum, and the brain stem.
B) Cerebellum, brain stem and cornea.
C) Reflex centre, cerebellum and the brain stem.
D) Brain stem, cerebellum and cerebrum.

Although we have a field of vision of more than 180° it is important during flight to use the scan ning technique, because:

A) it is tiring to look continually in the same direction.
B) only in the foveal area resolution is good enough to see an object clearly.
C) the reduction in the field of vision with decreasing altitude is due to a lack of vitamin A.
D) only in the peripheral area of the retina resolution is good enough to see an object clearly.

A pilot sitting below the eye datum point will normally be unable to recognize the:

A) overshoot and undershoot
B) overshoot
C) undershoot
D) the runway threshold

Why should a pilot turn his attention to the instruments when approaching on a snowed up, foggy or cloudy winter day? Because:

A) perception of distance and speed is difficult in an environment of low contrast.
B) the danger of a greying out will make it impossible to determine the height above the terrain.
C) his attention will be distracted automatically under these conditions.
D) pressure differences can cause the altimeter to give wrong information.

To prevent vertigo in flight we should

A) look towards the sides when we make a turn
B) not move the head suddenly while we are turning
C) keep breathing normally
D) breath deeply but control the respiratory frequency

In the absence of external reference points, the sensation that the vehicle in which you sitting is moving when it is in fact the vehicle directly alongside which is moving is called:

A) illusion of relative movement.
B) somato-gravic illusion.
C) autokinetic illusion.
D) cognitive illusion.

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121. Myopia is commonly called:

A) Farsightedness.
B) Nutritional deficiency.
C) Colour blindness.
D) Nearsightedness.

The semicircular canals form part of the:

A) ear drum.
B) inner ear.
C) external ear.
D) middle ear.

The most probable reason for spatial disorientation is:

A) a poor instrument cross-check and permanently transitioning back and forth between instruments and visual references.
B) to believe the attitude indicator.
C) to rely on instruments when flying in and out of clouds.
D) the lack of attention to the vertical speed indicator.

With regard to central vision, which of the following statements are correct?

1. It is due to the functioning of rods.
2. It enables details, colours and movement to be seen.
3. Its very active both during the day and at night.
4. It represents a zone where about 150.000 cones per mm are located to give high resolution capacity.

A) 1, 3
B) 2, 3, 4
C) 1, 2, 4
D) 2, 4

Autokinetic illusion is:

A) an illusion in which a stationary point of light, if stared at for several seconds in the dark, may - without a frame of reference - appear to move.
B) the sensation during a radial acceleration of seeing a fixed reference point moving into the opposite direction of the acceleration.
C) poor interpretation of the surrounding world.
D) a conflict between the visual system and bodily sensations.

During flight under IMC information from the proprioceptors should be:

A) sometimes obeyed.
B) always obeyed.
C) ignored.
D) born in mind.

The vestibular system is composed of:

1. two ventricles
2. a saccule
3. an utricle
4. three semicircular channels

A) 2, 3, 4
B) 2, 3
C) 1, 3, 4
D) 1, 4

The iris main purpose is to:

A) Initiate nerve impulses.
B) Transmit impulses via the optic nerve.
C) They let light into the eye.
D) Control the size, or diameter of the pupil.

The ability of the human eye to read alphanumeric information (piercing vision):

A) is governed by peripheral vision over an area of approximately 20 degrees of angle.
B) is almost equally shared by the entire retina.
C) is limited to daytime using the rod cells.
D) is limited to the foveae area of the retina.

Linear acceleration when flying straight and level in IMC may give the illusion of:

A) climbing.
B) spinning.
C) descending.
D) yawing.

In order to get colour vision, it is necessary:

1. for there to be considerable amount of light (ambient luminosity)
2. at night to look at the point to be observed at an angle of 15°
3. to allow the eye a period of time to get used to the light
4. to avoid white light

A) 1
B) 4
C) 3
D) 2

The vestibular system:

A) Consists of the outer, middle and inner ear.
B) Is the body' s sound-, motion-, and gravity- sensing organ.
C) Should always be trusted to judge an aeroplanes attitude.
D) Is the body' s motion- and gravity- sensing organs.

When you stare at a single light against the dark (f.e. an isolated star) you will find the light appears to move after some time. This phenomenon is called:

A) leans.
B) autokinetic phenomenon.
C) Coriolis illusion.
D) black hole illusion.

On initiating recovery from a spin, the pilot may have a strong sensation of turning:

A) In a direction opposite to that of the spin.
B) Quickly upwards.
C) Slowly upwards.
D) In a direction the same as the spin.

A pilot sitting below the eye datum point will normally be unable to see the:

A) undershoot.
B) the runway threshold.
C) overshoot.
D) overshoot and undershoot.

The Vestibular Apparatus consists of the:

A) Eustachian tube and the pinna.
B) Eustachian tube and the semi-circular canals.
C) Cochlea and auditory nerve.
D) Semi-circular canals, Utricles and Saccules.

The Black hole phenomenon occurs during approaches at night and over water, jungle or desert. When the pilot is lacking of visual cues other than those of the aerodrome there is an illusion of:

A) being too low, flying a steeper approach than normal.
B) being too high and too far away, dropping low and landing short.
C) being too close, landing long.
D) climbing.

When accelerating forward the otoliths in the utriculus/sacculus will:

A) give the illusion of climbing (body tilting backwards, nose of the a/c going up).
B) give the illusion of descending (body tilting downwards, or forwards, nose of the airplane going down).
C) give the illusion of straight and level flight.
D) give the illusion of banking.

Which is the audible range to human hearing?

A) Between 16 MHz and 20.000 MHz.
B) Between 16 Hz and 20 KHz.
C) Between 16 Hz and 20 MHz.
D) Between 16 KHz and 20 KHz.

The phenomenon of accommodation, which enables a clear image to be obtained, is accomplished by which of the following?

A) The rods.
B) The retina.
C) The crystalline lens.
D) The cones.

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141. The area in front of a threshold descends towards the threshold. Possible danger is:

A) approach is higher than normal and may result in a long landing.
B) to misjudge the length of the runway.
C) to drop far below the glide path.
D) approach is lower than normal and may result in a short landing.

What would be the effect if in a tight turn one bends down to pick up a pencil?

A) Inversion Illusion.
B) Vertigo.
C) Coriolis effect.
D) Barotrauma.

Spatial disorientation will be most likely to occur during flight:

A) if the brain receives conflicting information and the pilot does not believe the instruments.
B) when flying in and out of clouds and the pilot maintains good instrument cross check.
C) when flying in light rain below the ceiling.
D) when flying in bright sunlight above a cloud layer.

How is a roll change sensed?

A) Roll change is sensed by chalk-like crystals, the vestibular nerve is stimulated and the nerve impulses transmitted to the brain.
B) The roll is sensed by hairs in the Eustachian tube, the vestibular nerve is stimulated and the nerve impulses transmitted to the brain.
C) Hairs in the semicircular canals sense fluid motion caused by roll, the vestibular nerve is stimulated and the nerve impulses transmitted to the brain.
D) The middle ear senses roll, the vestibular nerve is stimulated and the nerve impulses transmitted to the brain.

Adaptation is:

A) the change of the diameter of the pupil.
B) the adjustment of the crystalline lens to focus light on the retina.
C) the reflection of the light at the cornea.
D) the adjustment of the eyes to high or low levels of illumination.

The small sacs located in the vestibule are:

A) Both B and C are correct.
B) Crystals in the semicircular canals.
C) Sacs with sensory hairs.
D) Chalk-like crystals called otoliths.

You fly VFR from your home base (runway width 27 m), to an international airport (runway width 45 m). On reaching your destination there is a risk of performing a:

A) high approach with undershoot
B) high approach with overshoot
C) low approach with overshoot
D) low approach with undershoot

When accelerating in level flight we could experience the sensation of a:

A) turn.
B) descent.
C) climb.
D) spin.

If spatial disorientation occurs, flight crew should:

A) All of the above are correct.
B) Never fly IMC and VMC at the same time.
C) Refer to the instruments.
D) Delay intuitive actions long enough to check instruments.

Which procedure is recommended to prevent or overcome spatial disorientation?

A) Tilt your head to the side to get better information from the semicircular canals.
B) Rely entirely on the indications of the flight instruments.
C) Rely on the Seat-of-the-Pants-Sense.
D) Get adapted to low levels of illumination before flying and use off-centre vision all the time.

Which one of the following statements is correct regarding the use of cockpit lighting for night flight:

A) Coloration shown on maps is least affected by the use of direct red lighting.
B) The use of regular white light, such as flashlight, will impair night adaptation.
C) Cockpit lighting may only be used during short intervals to protect the light adaptation.
D) Reducing the light intensity to a minimum level will eliminate blind spots.

We know that, in the mechanism of sight, the retina allows for:

A) the analysis of visual signals.
B) binocular vision.
C) the acquisition of the visual signal and its coding into physiological data.
D) the acquisition of the visual signal and the accommodation process.

If spatial disorientation occurs, flight crew should:

A) All of the above are correct.
B) Refer to the instruments.
C) Delay intuitive actions long enough to check instruments.
D) Never fly IMC and VMC at the same time.

Barodontalgia:

A) even arises with healthy teeth.
B) arises especially with irritations of the sensitive tissues close to the root of a tooth.
C) arises in combination with a cold and very high rates of descent.
D) arises only at higher altitudes and after decompression.

The photosensitive cells being responsible for night vision are called:

A) the foveas.
B) the corneas.
C) the rods.
D) the cones.

Presbycusis causes loss of:

A) Both equally.
B) Low tones.
C) Can be prevented by ear plugs.
D) High tones.

When flying at night the first sense to be affected by a slight degree of hypoxia is the:

A) sense of balance.
B) vision.
C) proprioceptive sensitivity.
D) cochlea.

What does not impair the function of the photosensitive cells?
A) Oxygen deficiency.
B) Fast speed.
C) Acceleration.
D) Toxic influence (alcohol, nicotine, medication).

Which is the audible range to human hearing?
A) Between 16 MHz and 20.000 MHz.
B) Between 16 Hz and 20 KHz.
C) Between 16 Hz and 20 MHz.
D) Between 16 KHz and 20 KHz.

The Leans or Somatogyral illusion can be caused by:
A) bunting the aircraft
B) prolonging a turn
C) a carrier take-off
D) going into a turn to quickly

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161. Fixation or tunnel vision is primarily to be expected when:
A) stress and motivation are medium.
B) stress and motivation are low.
C) stress is medium.
D) stress is high.

Once we have constructed a mental model we tend:
A) to give undue weight to information that contradicts the model.
B) to give equal weight to contradicting and confirming information.
C) to give undue weight to information that confirms the model.
D) to alter that model unnecessarily frequently.

Depth perception when objects are close (< 1 m) is achieved through:
A) visual memory only.
B) seeing with two eyes (binocular vision).
C) good visibility only.
D) the blind spot at the retina.

To prevent the autokinetic phenomena, the following can be done:
A) turn down cabin light and shake head simultaneously.
B) fixate the source of light, first with one eye, then with the other.
C) look sideways to the source of light for better fixation.
D) look out for additional references inside and/or outside the cockpit using peripheral vision also.

How can a pilot overcome a vertigo, encountered during a real or simulated instrument flight?

1. Establish and maintain an effective instrument cross-check.
2. Always believe the instruments; never trust your sense of feeling.
3. Ignore arising illusions.
4. Move the head sideward and back and forth to shake-off illusions.

A) Only 4 is correct.
B) 1, 2 and 3 are correct.
C) 1 and 2 are correct, 3 and 4 are false.
D) 1, 2, 3 and 4 are correct.

Which part of the eye carries out 70 - 80% of the focussing of the eye?

A) The fovea.
B) The iris.
C) The lens.
D) The cornea.

The so-called Seat-of-the-Pants sense is:

A) useful for instrument and contact flight.
B) the only sense a pilot can rely on, when flying in IMC.
C) only to be used by experienced pilots with the permission to fly in IMC.
D) not suitable for spatial orientation when outside visual references are lost.

What is the day blind spot?

A) The fovea has no rods and cones which creates a blind spot.
B) An area around the fovea is over stimulated by bright daylight which creates a day blind spot.
C) The day blind spot is caused by the lack of rods on the iris.
D) The optic nerve has no rods and cones which creates a blind spot.

Presbycusis is type of hearing loss which can be caused by:

A) B and C are correct.
B) Damaged or fatigued sensory hair cells.
C) Ageing.
D) High noise.

When turning in IMC, head movements should be avoided as much as possible. This is a prevention against:

A) Coriolis illusion.
B) oculogyral illusion.
C) autokinesis.
D) pressure vertigo.

Illuminated anti-collision lights in IMC:

A) can cause disorientation.
B) will improve the pilots depth perception.
C) can cause colour-illusions.
D) will effect the pilots binocular vision.

Trapped gas disorders of the ears can be caused by:

A) Too hard equalisation of the pressure in you outer ear.
B) Flying at too high altitude without supplemental oxygen.
C) Flying after deep scuba diving with decompression.
D) Flying when you have a cold.

The ability of the human eye to read alphanumeric information (piercing vision):

A) is governed by peripheral vision over an area of approximately 20 degrees of angle.
B) is limited to the foveal area of the retina.
C) is limited to daytime using the rod cells.
D) is almost equally shared by the entire retina.

What technique should a pilot use to scan for traffic to the right and the left during straight and level flight?

A) Concentrate on relative movement detected in the peripheral vision area.
B) Continuous sweeping of the windshield right to left.
C) Concentrate on moving objects until identified
D) Systematically focus on different segments of the sky for short intervals.

Through which part of the ear does the equalization of pressure take place, when altitude is changed?

A) External auditory canal.
B) Cochlea.
C) Eustachian tube.
D) Tympanic membrane.

Glaucoma:

1. can lead to total blindness
2. can lead to undetected reduction of the visual field
3. reduces visual acuity in its final stage.

A) 1, 2 and 3 are false.
B) 1, 2 and 3 are correct.
C) 1 is correct.
D) 1 and 2 are correct, 3 is false.

A pilot is prone to get vertigo, as visibility is impaired (dust, smoke, snow). What is the correct action to prevent vertigo?

A) Concentrate on the vertical speedometer.
B) Reduce rate of breathing until all symptoms disappear, then breathe normal again.
C) Depend on the instruments.
D) Depend on information from the semicircular canals of the inner ear, because those are the only ones giving correct information.

What is rhodopsin?

A) A chemical always present in rod cells.
B) A chemical sometimes present in cone cells.
C) A chemical called visual purple always present in cone cells.
D) A chemical called visual purple which sometimes is present in rod cells.

Among the factors that increase tolerance to long-duration g forces are:

A) Tensing the leg muscles and correct use of pilot's harness.
B) Correct use of pilot's harness and tensing of abdominal muscles.
C) Anti-g suits and correct use of pilot's harness.
D) Bending forward or supine body position and tensing of abdominal muscles.

Although we have a field of vision of more than 180° it is important during flight to use the scan ning technique, because:

A) the reduction in the field of vision with decreasing altitude is due to a lack of vitamin A.
B) only in the foveal area resolution is good enough to see an object clearly.
C) it is tiring to look continually in the same direction.
D) only in the peripheral area of the retina resolution is good enough to see an object clearly.

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181. Vibrations within the frequency band of 1/10 to 2 Hertz are a factor contributing to air-sickness, because they:

A) make the stomach and its contents vibrating at the same frequency.
B) upset the vestibular apparatus.
C) interfere with the frequencies of the central nervous system.
D) interfere with those of the own blood thus causing circulation problems.

The kinaesthetic sense does not orient an individual to his surroundings, but informs him of:

A) the relative motion and relative position of his body parts.
B) a touch on the skin.
C) our surroundings.
D) the condition in the body itself.

A pilot is used to land on wide runways only. When approaching a smaller and/or narrower runway, the pilot may feel he is at a:

A) lower than actual height with the tendency to overshoot.
B) lower height and the impression of landing slow.
C) greater height and the impression of landing short.
D) greater height than he actually is with the tendency to land short.

Disorientation is more likely to occur when the pilot is:

1. flying in IMC
2. frequently changing between inside and outside references
3. flying from IMC into VMC
4. having a cold

A) 1, 3 and 4 are correct
B) 2, 3 and 4 are correct
C) 1, 2 and 4 are correct
D) 1, 2 and 3 are correct

When a pilot looks at a near object, the:
A) pupil becomes smaller
B) cornea becomes more curved
C) lens flattens
D) cornea changes shape

What would be the effect if in a tight turn one bends down to pick up a pencil?
A) Barotrauma.
B) Inversion Illusion.
C) Coriolis effect.
D) Vertigo.

Which part of the inner ear is responsible for the perception of noise?
A) The cochlea.
B) The Eustachian tube.
C) The semicircular canals.
D) The sacculus and utriculus.

What is referred to as stereoscopic vision?
A) The lack of ability to focus both eyes on a single object.
B) Apparent foreshortening.
C) The ability to focus both eyes on a single object.
D) Motion parallax.

When spinning an aircraft, the predominating type of acceleration will be:
A) radial acceleration.
B) vertical acceleration.
C) linear acceleration.
D) angular acceleration.

When focussing on near objects:
A) the pupil gets larger.
B) the shape of lens gets flatter.
C) the cornea gets smaller.
D) the shape of lens gets more spherical.

What are vestibular illusions?
A) Both A and B are correct.
B) Pressure difference in the middle and outer ear.
C) The vestibular system may function incorrectly in flight and cause false impressions or microceptions.
D) Adverse change in angular acceleration or velocity in the fluid in the eustachian tube.

Which flight-manoeuvre will most likely induce vertigo? Turning the head while:
A) banking.
B) descending.
C) flying straight and level.
D) climbing.

To optimise ones night-vision performance, it is necessary:

1. to spend some time getting adapted to low levels of illumination
2. to increase the instrument panel lighting by reducing the cockpit lighting
3. not to focus on the point to be observed
4. to avoid blinding

A) 2, 3, 4
B) 1, 2, 4
C) 2
D) 1, 3, 4

One of the causes of Conductive Deafness is:

A) hypertension,
B) age.
C) a blow on the head with subsequent damage to the ossicles.
D) long exposures to levels of noise in excess of 90 dbs.

What is the audible range of the human ear:

A) 200 – 2.000 Hz
B) 600 – 4.000 Hz
C) 20 – 20.000 Hz.
D) 60 – 30.000 Hz.

The Vestibular Apparatus consists of the:

A) Eustachian tube and the semi-circular canals.
B) Eustachian tube and the pinna.
C) Cochlea and auditory nerve.
D) Semi-circular canals, Utricles and Saccules.

The nervous system cells are capable of:

A) Slow generalised activity.
B) Both A and C are correct.
C) Stimulating the rate of cognition.
D) Efficient and rapid activity.

Which of the following symptoms can mark a beginning hyperventilation?

A) Cyanosis (blueing of lips and finger nails).
B) Slow rate of breathing.
C) Slow heart beat.
D) Dizzy feeling.

The semicircular canals detect:

A) sound waves.
B) angular accelerations.
C) changes in arterial pressure.
D) linear accelerations.

If you are disorientated during night flying you must:
A) check your rate of breathing - do not breathe too fast.
B) rely on instruments.
C) look outside.
D) descend.

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201. Flying a coordinated level turn will:
A) make the body' s pressure receptors feel an increased pressure along the body' s vertical axis.
B) first give the impression of climb , then the impression of descent.
C) make the blood being pooled in the head.
D) make the seat-of-the-pants sense feel a decreased pressure along the body' s vertical axis.

Rising the perceptual threshold of a sensory organ means:
A) a lesser selectivity.
B) a lesser sensitivity.
C) a greater sensitivity.
D) a greater selectivity.

The semi-circular canals react to:
A) Temperature.
B) Linear acceleration.
C) Heat.
D) Angular acceleration.

Which of the following provides the basis of all perceptions?
A) The aural or visual significance attributed in short term memory.
B) The intensity of the stimuli.
C) The separation of figure and background.
D) The aural or visual significance attributed in long term memory.

The otoliths in the inner ear are sensitive to:
A) constant speed only.
B) linear acceleration and gravity.
C) angular speed.
D) angular acceleration.

Acuity is 100% at the:
A) Optic cones
B) Retina.
C) Fovea.
D) Optic nerve.

When the optical image forms in front of the retina; we are talking about:

A) myopia.
B) Hypermetropia.
C) presbyopia.
D) astigmatism.

Empty field myopia is caused by:

A) flying over mountainous terrain.
B) ozone at altitude.
C) lack of distant focal points.
D) atmospheric perspective.

How long does it take to develop full night vision adaption:

A) 1 hour.
B) 10 minutes.
C) 30 minutes.
D) 1 minute.

Autokinesis is:

A) the change in diameter of the pupil, when looking in the dark.
B) the apparent movement of a static single light when stared at for a relatively long period of time in the dark.
C) the phenomenon of spinning lights after the abuse of alcohol.
D) the automatically adjustment of the crystalline lens to objects situated at different distances.

Which of the following statements is correct?

A) 70% of information processed by man enters via the visual channel.
B) Hearing is the sense which collects most information in man
C) The kinaesthetic channel provides the most important information for flying.
D) 40% of information processed by man enters via the visual channel.

Which of the following components belong to the middle ear?

A) Otoliths.
B) Endolymph.
C) Semicircular canals.
D) Ossicles.

Which problem may occur, when flying in an environment of low contrast (fog, snow, darkness, haze)? Under these conditions it is:

A) difficult to estimate the correct speed and size of approaching objects.
B) impossible to detect objects.
C) improbable to get visual illusions.
D) no problem to estimate the correct speed and size of approaching objects.

What is the main purpose of the central nervous system?

A) The control of human emotions.
B) The activation of the body' s muscles.
C) The control of human emotions including love, hate, fear, anger and sadness.
D) To take care of the body' s reception of stimuli, the transmission of nerve impulses and the activation of muscle mechanisms.

The following statements are true except:

A) cones are most densely in the fovea centralis and have a one-to-one connection to the brain.
B) rods are responsible for night vision and have a poor ability to discriminate.
C) rods are responsible for ambient vision and are in groups connected to the brain.
D) cones are responsible for night vision and are most densely in the fovea centralis.

Empty Field Myopia is the eyes natural focus at a distance of approximately:

A) 0.5 - 10 metres.
B) 20 - 200 metres.
C) Between just under 1 metre and 1.5 metres.
D) At the horizon.

Starting a coordinated level turn can make the pilot believe to:

A) climb.
B) descent.
C) turn into the opposite direction.
D) increase the rate of turn into the same direction.

Rods (scotopic visual cells) allow for:

A) good night-vision after adaptation to darkness (30 min).
B) good, virtually instantaneous night-vision (scotopic vision).
C) red vision, both during the day and at night.
D) precise vision of contours and colours.

When a pilot is starring at an isolated stationary light for several seconds in the dark he might get the illusion that:

A) the intensity of the light is varying.
B) the size of the lights varying.
C) the colour of the light is varying.
D) the light is moving.

What should a pilot do if a passenger shows signs of airsickness?

A) Never allow any passengers to fly if they have taken motion sickness medications.
B) All of the above are correct.
C) Encourage him or her to read a magazine, book etc., and try not to worry about the surroundings.
D) Encourage him or her to look out of the window at a fixed, definite object such as the horizon, faraway clouds, or a distant object on the ground is suitable.

221. A forward acceleration, without visual reference, can cause:
A) An illusion of a turn in the opposite direction.
B) Alternobar illusion.
C) An illusion of backward tilt because it results in backward displacement of the otolithic membranes.
D) An illusion of descent, because it results in backward displacement of the otolithic membranes.

The requirement of good sunglasses is to:
A) increase the time for dark adaptation.
B) absorb enough visible light to eliminate glare without decreasing visual acuity, absorb UV and IR radiation and absorb all colours equally.
C) fit to the pilots individual taste.
D) eliminate distortion in aircraft windshields.

What should a pilot do if he has no information about the dimensions of the runway and the condition of the terrain underneath the approach? He should:
A) make an instrument approach and be aware of the illusory effects that can be induced.
B) be aware that approaches over down sloping terrain will make him believe that he is higher than actual.
C) make a visual approach and call the tower for assistance.
D) be aware that approaches over water always make the pilot feel that he is lower than actual height.

What is the purpose of the otolith organs?
A) Sense linear (vertical) acceleration and gravity.
B) Sense angular acceleration.
C) Transform sound to nerve impulses.
D) Both A and C are correct.

Which system(s) should be trusted during flight through clouds and instrument meteorological conditions (IMC)?
A) Visual.
B) Proprioceptive.
C) Vestibular.
D) Combined function of all senses.

Which part of the vestibular apparatus is affected by changes in gravity and linear acceleration?
A) The semicircular canals.
B) The cochlea.
C) The sacculus and utriculus.
D) The Eustachian tube.

When the visual image is focussed in front of the retina the condition is:
A) Hypermetropia.
B) Myopia.
C) Aerodantalgia.
D) Presbycusis.

How is haze effecting your perception?

A) Objects will give better contrast.
B) Haze makes the eyes to focus at infinity.
C) Objects seem to be further away than in reality.
D) Objects seem to be closer than in reality.

In the absence of external reference points, the sensation that the vehicle in which you sitting is moving when it is in fact the vehicle directly alongside which is moving is called:

A) cognitive illusion.
B) somato-gravic illusion.
C) illusion of relative movement.
D) autokinetic illusion.

Dizziness and tumbling sensations, when making head movements in a tight turn, are symptoms of:

A) Oculogravic illusion.
B) Pilots vertigo.
C) Flicker-vertigo.
D) Nystagmus.

The cupula in the semicircular canal will be bent, when a rotation begins. This is because:

A) the cupula will bend on constant angular speeds.
B) the cupula will stay in place and give the correct impression.
C) the fluid (Endolymph) within the semicircular canal lags behind the accelerated canal walls.
D) the fluid (Endolymph) will precede the accelerated canal walls.

What is the role of the Eustachian tube in your ear?

A) To transfer mechanical energy from the eardrum to the ossicles.
B) To transform mechanical energy from sound waves to electrical signals.
C) To equalise air pressure on both sides of the eardrum.
D) To convert acceleration and gravity forces to electrical signals, which in turn are sent to your brain for interpretation.

The impression of an apparent movement of light when stared at for a relatively long period of time in the dark is called:

A) autokinesis.
B) Oculogravic illusion.
C) white out.
D) oculogyral illusion.

The proprioceptive senses (Seat of-the-Pants-Sense):

A) can be used, if trained, to avoid spatial disorientation in IMC
B) can neither be used for motor coordination in IMC and VMC
C) is a natural human instinct, always indicating the correct attitude
D) give wrong information, when outside visual reference is lost

Which of the following statement(s) is/are correct?

1. The retina has rods on its peripheral zone and cones on its central zone.
2. The retina has cones and the crystalline lens has rods.
3. The rods allow for night-vision.
4. The cones are located on the peripheral zone of the retina.

A) 2, 3
B) 1, 3
C) 1
D) 4

What sound intensity represents the threshold of pain:

A) 115 dB.
B) 95 dB.
C) 170 dB.
D) 140 dB.

Excessive exposure to noise damages:

A) the sensitive membrane in the cochlea.
B) the eardrum.
C) the semi circular canals.
D) the ossicles.

One of the waste products of the metabolic process in the cell is:

A) sugar.
B) water.
C) fat.
D) protein.

Health and hygiene:

Please mark the counter-measure a pilot can use against a Barotrauma of the middle ear (aerotitis):

A) stop descending, climb again and then descend with reduced sink rate.
B) use drugs against a cold.
C) increase the rate of descent.
D) stop chewing and swallowing movements (Valsalva)

Which is correct:

1. Paradoxic sleep refreshes the brain, memory and body.
2. Paradoxic sleep decreases during the night.

A) 1 & 2
B) Neither
C) 2 only
D) 1 only

The effects of alcohol are ... with increased altitude:

A) unaffected.
B) decreased.
C) neutralised.
D) increased.

A person smoking 20 cigarettes a day will have a raised carboxy-haemoglobin level of about 7%. This equates to a reduction in oxygen-carrying capacity of about:

A) 3,000 - 4,000 ft.
B) 4,000 - 5,000 ft.
C) 10,000 - 12,000 ft.
D) 2,000 - 3,000 ft.

Noise induced hearing loss is influenced by

A) the duration of a noise but not its intensity
B) the duration and intensity of a noise
C) the intensity of the noise but not its duration
D) the suddenness of onset of a noise

The EEG trace during REM sleep is similar to that of an individual who is:

A) Awake.
B) Unconscious.
C) In slow wave sleep.
D) At rest.

A pilot has caught a cold. What may happen to his susceptibility to hypoxia:

A) it will increase due to the reduction in lung capacity due to the cold.
B) it will increase due to the need to generate more oxygen which leads to a greater demand for oxygen.
C) it will decrease due to the reduced level of bodily functions.
D) it will decrease because colder air is denser and has higher partial pressure.

When assessing an individuals risk in developing coronary artery disease, the following factors may contribute:

1. obesity
2. distress
3. smoking
4. family history

A) 1, 2 and 3 are correct, 4 is false.
B) Only 3 is correct, 1, 2 and 4 are false.
C) 1, 2, 3 and 4 are correct.
D) 2 and 3 are correct, 1 and 4 are false.

Which statement is correct regarding alcohol in the human body:

A) An increase of altitude decreases the adverse effect of alcohol.
B) A small amount of alcohol increases visual acuity.
C) When drinking coffee, the human body metabolizes alcohol at a faster rate than normal.
D) Judgement and decision making can be affected even by a small amount of alcohol.

A pilot should consult an Aviation Medicine specialist before donating blood because:

A) donation may lead to a lowering of the body temperature causing unpredictable sleepiness.
B) donation may lead to a lowering of blood pressure (Hypotension).
C) donation may lead to a reduced tolerance of altitude.
D) donation may lead to a rise in blood pressure (Hypertension).

The chemical substance responsible for addiction to tobacco is:

A) carbon monoxide.
B) the combination of nicotine, tar and carbon monoxide.
C) tar.
D) nicotine.

The metabolisation of alcohol:

A) can be influenced by easy to get medication.
B) is quicker when used to it.
C) can be accelerated even more by coffee.
D) is a question of time.

The Eustachian tube is the passage way between the:

A) nose, pharynx and the external auditory canal.
B) nasopharynx and the middle ear.
C) sinuses and the pharynx.
D) nose, pharynx and inner ear.

To reduce the risk of coronary artery disease, exercise should be:

A) avoided since raising the heart rate shortens the life of the heart.
B) triple the resting heart rate for 20 minutes, once a week.
C) double the resting heart rate for at least an hour, five times a week.
D) double the resting heart rate for at least 20 minutes, three times a week.

Grey-out happens approximated at a g force of:

A) -3g X
B) +3g X
C) +3g Y
D) +3g Z

How does alcohol affect sleep?

A) Many crewmembers sleep well after a few drinks, because REM sleep is improved by alcohol.
B) Alcohol can cause drowsiness, like sleeping medicine and a small amount of alcohol can be consumed if it is hard to fall asleep.
C) Both A and C are correct.
D) Many crewmembers feel that when they have had a few drinks, they sleep much better, but that is not true. When you sleep, with the aid of alcohol, you do not go into deep and full REM sleep; therefore when you wake up, usually earlier than normal, you are

The phenomena called empty-field myopia is a problem for pilots when:

A) Wearing polarised lenses.
B) An object appears to have different shapes when viewed at varying distances.
C) Scanning for traffic at night (night blind spot).
D) Attempting to scan for traffic in a featureless sky.

Which statement is correct?

1. Smokers have a greater chance of suffering from coronary heart disease.
2. Smoking tobacco will raise the individuals physiological altitude during flight.
3. Smokers have a greater chance for lung cancer.

A) 2 and 3 are correct, 1 is false
B) 1 and 3 are correct, 2 is false
C) 1 and 2 are correct, 3 is false
D) 1,2 and 3 are correct

Our body takes its energy from:

1. minerals
2. protein
3. carbohydrates
4. vitamins

A) 2, 3
B) 1, 2, 3, 4
C) 1, 3
D) 1, 4

Having a serious cold it is better not to fly, due to the extra risk of:

1. flatulence
2. pain in the ear during descent
3. pressure vertigo
4. pain in the nasal sinuses

A) 1 and 2 are correct
B) 1, 3 and 4 are correct
C) 1, 2 and 4 are correct
D) 2, 3 and 4 are correct

21. A large number of medical preparations can be bought without a doctors prescription. In relation to using these preparations, which of the following is correct:

A) a pilot using any of these preparations should get professional advice from a flight surgeon if he intends to fly and self-medicate at the same time.
B) they have no side effects which would give problems to a pilot during flight.
C) the side effects of these types of preparations are sufficiently negligible as to be ignored by pilots.
D) they will cause a condition of over-arousal.

Which of the following applies when alcohol has been consumed?

A) Even after the consumption of small amounts of alcohol, normal cautionary attitudes may be lost.
B) Small amounts of alcohol increase visual performance.
C) Acute effects of alcohol cease immediately when 100% oxygen is taken.
D) Drinking coffee at the same time will increase the elimination rate of alcohol.

The best method to effectively lose weight is to:

A) Eat less.
B) Take exercise.
C) Crash diet.
D) Use of appetite-suppressants.

How can noise damage hearing?

A) If noise exposure is loud enough or continues too long, these hair cells may not return to their normal state.
B) Both B and C are correct.
C) Noise can fatigue the hearing rod cells and cause noise induced loss of hearing.
D) Exposure to loud noise may fatigue the hair cells so much that they need several hours of quiet before they can revert to their normal state.

Food poisoning generally takes effect within:

A) 90 minutes.
B) 30 minutes.
C) 2 hours.
D) 60 minutes.

It is recommended that aircrew restrict themselves to a maximum caffeine intake a day of:

A) 100 - 150 mg.
B) 250 - 300 mg.
C) 50 - 100 mg.
D) 500 - 800 mg.

Astigmatism is:

A) An error in refraction in which the lens of the eye does not focus an image directly on the retina.
B) A result of the normal ageing process.
C) A condition caused by an equal curvature of the cornea.
D) A condition caused by an unequal curvature of the lens of the eye.

How can you determine if a person is suffering from a Barotrauma of the sinuses of the nose (aerosinusitis) or the middle ear (aerotitis)?

A) Hearing difficulties will normally accompany aerotitis.
B) Aerosinusitis will never develop during descent.
C) There is no difference.
D) Barotrauma of the middle ear will not effect hearing.

Breakfast should supply approximately ... of the daily calorie intake.

A) 15%
B) 30%
C) 25%
D) 10%

At rest the cardiac output (the quantity of blood the heart pumps in one minute) of an adult is approximately:

A) 450 ml/min
B) 45 liters/min
C) 5 liters/min
D) 75 liters/min

Visual acuity during flight at high altitudes can be affected by:

1. anaemia
2. smoking in the cockpit
3. carbon monoxide poisoning
4. hypoxia

A) 1, 2, 3 and 4 are correct.
B) 1,3 and 4 are correct.
C) 2,3 and 4 are correct.
D) 1,2 and 3 are correct.

Sunglasses with variable filtration (phototropic glasses):

A) are advantageous for pilots.
B) are ideal, as long as there are no polarisation effects.
C) are generally forbidden for pilots.
D) can have disadvantages when used in the cockpit due to their dependence on ultraviolet light which is screened by the cockpit glass.

Define obesity:

A) Obesity is a body condition referring to people who are 30% or more overweight.
B) Obesity (obeisance) is a description of a person who is very obedient. He or she will seldom question the captains authority.
C) Obesity is a body condition, which refers to people who are 35% or more overweight.
D) Obesity is a body condition, which refers to the body storing excess amounts of fat.. Obesity is caused by taking in more calories (energy) in food, than uses for physical activities.

An obese individual has:

A) a lower tolerance to g forces but is not susceptible to heart attacks.
B) a lower tolerance to g forces and is susceptible to heart attacks.
C) a higher tolerance to g forces but is not susceptible to heart attacks.
D) neither g tolerance nor susceptibility to heart attacks are influenced by obesity.

The retina allows for the acquisition of colours as a result of the:

A) cones located in its central part.
B) crystalline lens.
C) rods located in its central par.
D) rods located in its peripheral zone.

Exchange of gasses between the body and the environment takes place at the:

A) lungs.
B) muscles.
C) heart.
D) central nervous system.

What is dysbarism?

A) The combined effects of Boyles and Daltons law.
B) A meter used to measure pressure and volume changes.
C) Dysbarism refers to the various medical problems caused by body chemical imbalance.
D) Dysbarism refers to the various medical problems caused by gas expansion induced by decreased barometric pressure.

The body loses water via:

1. the skin and the lungs
2. the kidneys

A) 1 is correct and 2 is not correct.
B) both are false.
C) 1 is not correct and 2 is correct.
D) 1 and 2 are correct.

After SCUBA diving (more than 30 feet of depth) you have to wait a period of time before flying again. This period is at least:

A) 24 hours.
B) 48 hours.
C) 6 hours.
D) 12 hours.

Disturbances of pressure equalization in air-filled cavities of the head (nose, ear etc.) are called:

A) Barotrauma.
B) hypoxia.
C) embolism.
D) hyperventilation.

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41. Presbyopia is normally caused by:

A) a lack of vitamin A.
B) a decrease of accommodation.
C) a mis-shapened cornea.
D) a lack of empty field.

A passenger complains about a painful inflated belly at 8.000 feet. You advise him to:

1. unbuckle and massage the belly
2. stand up and let go the gases out of the intestines
3. eat less gas forming food and avoid carbohydrate beverages before flight in the future 4. drink a lot of water throughout the flight

A) only 2 is correct
B) 1 and 3 not advisable
C) 1, 2 and 3 are correct
D) 2 and 3 only are correct

When flying with a cold you might primarily experience problems with:

A) loss of night vision.
B) pain around the forehead.
C) cramps in hands and feet.
D) an increased heart rate.

Greyout can result from g-forces greater than:

A) +3g y
B) +3g x
C) +3g z
D) -3g z

What is presbyopia?

A) The lack of ability to resolve shapes and fine details of an object.
B) A result of the normal ageing process.
C) Presbyopia causes the lens to harden.
D) Both B and C are correct.

Drugs against allergies (antihistamines), when taken by an aviator can cause the following undesirable effects:

1. Drowsiness, dizziness
2. Dry mouth
3. Headaches
4. Impaired depth perception
5. Nausea

A) only 1 is correct.
B) 2, 3 and 4 are correct.
C) only 3, 4 and 5 are correct.
D) 1, 2, 3, 4 and 5 are correct.

When drugs against sleep disorders and/or nervousness have been taken and the pilot intends to fly, attention has to be paid to:

A) the effect they have on reaction time and perception awareness.
B) the effect they have on hearing.
C) schedule only those pilots, who show no reactions to these medications.
D) the fact that there is no difference in the quality of sleep produced under the influence of those drugs compared to normal drug-free sleep.

Which of the following statements are correct:

1. Scuba diving may be practiced without restriction.
2. Many medicines have effects which are incompatible with flight safety.
3. An adequate amount of fluid should be drunk when flying.
4. Diet has no repercussion on health.

A) 2, 3 and 4 are correct.
B) 2 and 3 are correct
C) 1, 3 and 4 are correct..
D) 1, 2 and 3 are correct.

What may predispose a person for a heart attack?

A) Smoking, high cholesterol level, diet or abnormal blood pressure.
B) Family history of asthma, smoking, over exertion and weight.
C) Age and stress.
D) Smoking, asthma, alcohol use and high blood pressure.

Which of the following provide the body with energy?

1. protein and carbohydrates
2. vitamin A
3. minerals and vitamins
4. vitamin

A) 1 only.
B) 1 and 4.
C) 1 and 2.
D) 1, 2, 3, 4.

DCS is normally associated with ascent to altitudes over:

A) 10,000 ft
B) 33,700 ft
C) 40,000 ft
D) 25,000 ft

One of the commonest cause of in-flight incapacitation is:

A) The common cold.
B) Gastro-enteritis.
C) Hypoglycaemia.
D) Severe circadian disrhythmia.

Hypermetropia is caused by a ... eyeball and treated by a ... lens where as Myopia is caused by a ... eyeball and treated with a ... lens:

A) lengthened; convex; shortened; concave.
B) shortened; convex; lengthened; concave.
C) shortened; concave; lengthened; convex.
D) lengthened; concave; shortened; convex.

Which of the following are correct?

1. Scuba diving imposes no restriction on flying.
2. Use of some medication can affect flying.
3. One should drink sufficient water during flight to prevent dehydration.
4. Diet does not have an effect on health.

A) 1, 2, 3
B) 1, 2, 3, 4
C) 2, 3 & 4
D) 2, 3

Should a pilot fly with a bad cold he/she could suffer from:

A) Sinus pain.
B) Bends.
C) Chokes.
D) Blurred vision.

A few hours after landing a pilot feels pain in his/her joints. The correct action is:

A) Take physiotherapy.
B) Ignore it since is probably due to common after-effect of height.
C) See an Aviation Medical Specialist as soon as possible.
D) Take exercise which will cause the pain to disappear.

The organ that transfers vibrations to nerve impulses in your ear is called:

A) the cochlea
B) the otolith organs
C) the semicircular canals
D) the ossicles

What is meant by the term Incapacitation?

A) The lacking skill of an inexperienced pilot.
B) The effect of gastro – intestinal upset.
C) When situational awareness of the crew is too low.
D) The gradual or sudden loss of a crew members ability to function.

Define a unit of alcohol:

A) A unit of alcohol is equivalent to a standard glass of wine, spirit or pint of beer. Specifically it is defined as 10 ml or 18 grams pure alcohol - this is equivalent to a bottle of beer (0,5 l).
B) A unit of alcohol is defined as 10 ml or 18 grams pure alcohol, which is equivalent to a bottle of beer (0,5 l).
C) A unit of alcohol is equivalent to a standard glass of wine, a measure of spirit or to half a pint of beer.
D) A unit of alcohol is the amount required to give 0,05 BLA.

Having a serious cold, you are going to fly. What can you expect:

A) chokes.
B) hypoxia.
C) pain in the sinuses.
D) bends.

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61. What is astigmatism?

A) The inability to focus different meridians simultaneously (e.g., can not see vertical antenna and horizontal wires at the same time).
B) Can not focus well on an object far away.
C) Reduced vision of only one eye.
D) Can not see one or more colour.

Are photochromic sunglasses permissible to be used in flight by a pilot?

A) Never
B) Only at night
C) Only in VMC
D) Always

Healthy people are usually capable to compensate for a lack of oxygen up to:

A) 15.000 feet
B) 20.000 feet
C) 10.000 - 12.000 feet
D) 25.000 feet

Carbon monoxide is always present in the exhaust gases of engines. If a pilot is exposed to carbon monoxide, which of the following responses is correct?

A) When exposed to carbon monoxide for a long period of time, the body will adapt to it and no adverse physical effects are experienced.
B) Carbon monoxide can only affect pilots if they are exposed to them for a long period of time.
C) A short exposure to relatively high concentrations of carbon monoxide can seriously affect a pilot´ s ability to operate an aircraft.
D) Carbon monoxide is easily recognised by odour and taste.

The rate of absorption of alcohol depends on many factors. However, the rate of metabolism or digestion of alcohol in the body is relatively constant. It is about:

A) 0,3 - 0,35 mg % per hour.
B) 0,2 - 0,25 mg % per hour.
C) 0,02 - 0,05 mg % per hour.
D) 0,01 - 0,015 mg % per hour.

The effect of sleeping off alcohol is to:

A) have no effect on the absorption rate.
B) slow down the absorption rate.
C) rapidly speed up, and then rapidly decrease, absorption rate.
D) slowly speed up the absorption rate.

Someone who has anaemia has:

A) not enough functional haemoglobin.
B) not enough white blood cells.
C) not enough plasma.
D) not enough platelets.

A pilot who has been scuba diving should avoid flying:

A) Without medical advice if a depth of 30 ft has been exceeded
B) Within 36 hours of the last dive
C) Within 24 hours, or 48 hours if a depth of 30 ft has been exceeded
D) Within 12 hours, or 24 hours if a depth of 30 ft has been exceeded

Concerning the effects of drugs and pilots performance

A) the primary and the side effects have to be considered.
B) only the primary effect has to be considered; side effects are negligible.
C) the side effects only have to be considered.
D) medication has no influence on pilot' s performance.

Conductive hearing loss can be caused by:

1. damage to the ossicles in the middle ear caused by infection or trauma
2. a damage of the auditory nerve
3. an obstruction in the auditory duct
4. a ruptured tympanic membrane

A) 1,2,3 and 4 are correct
B) 2,3 and 4 are correct, 1 is false
C) 1,3 and 4 are correct, 2 is false
D) 1,2 and 3 are correct, 4 is false

Alcohol metabolism (elimination rate):

A) depends on whether you get some sleep in between drinks.
B) is approx. .015 percent per hour and cannot be expedited.
C) definitely depends on the amount and composition of food which has been eaten.
D) is approx. 0.3% per hour.

The primary symptom of DCS is:

A) Oxygen bubbles in the blood.
B) Formication.
C) The Bends.
D) Cyanosis.

Which of the following factors decrease resistance to DCS?

1. Body height.
2. Scuba diving.
3. Obesity.
4. Age.

A) 3 and 4
B) 1, 2 and 3
C) 1, 2 and 4
D) 2, 3 and 4

Noise induced hearing loss (NIHL) is caused by:

A) a blocked Eustachian tube.
B) reduced mobility of the ossicles.
C) pressure differences on both sides of the eardrum.
D) damage of the sensitive membrane in the cochlea due to overexposure to noise.

What is peer pressure?

A) Self-imposed pressure by trying to prepare for flight test examinations.
B) A situation where an individual is pressured to perceive (peer-pressured) to understand a complicated task.
C) Pressure caused by too much information.
D) Self-imposed pressure by trying to live up to others performance or expectation.

The major types of Barotrauma are:

A) Vascular, gastro-intestinal, Aerodontalgia and sinus
B) Otic, gastro-intestinal, Aerodontalgia and sinus
C) Otic, gastro-intestinal, vascular and sinus
D) Otic, vascular, Aerodontalgia and sinus

Which of the following statements are correct?

1. Hypothermia affects physical and mental abilities.
2. Man has effective natural protection against intense cold.
3. Shivering makes it possible to combat the cold to a certain extent, but uses up a lot of energy.
4. Disorders associated with hypothermia appear at a body temperature of less than 35° C.

A) 1,2,3
B) 2,3,4
C) 2,4
D) 1,3,4

The WHO definition of alcoholism is: when excessive use of alcohol ... damages a persons ... ,... or ... life.

A) infrequently; performance; health; social.
B) permanently; health; motivation; social.
C) constantly; well-being; health; social.
D) repeatedly; physical; mental; social.

The sleep pattern is closely associated with:

A) Body temperature.
B) Blood pressure.
C) Heart rate.
D) Adrenal gland.

Radiation can cause damage to the:

A) DCS and can cause skin cancer.
B) NIHL and can cause skin cancer.
C) CNS and organs and can cause skin cancer.
D) long and short term memories.

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81. The following can be observed when the internal body temperature falls below 35° C:

A) mental disorders, and even coma.
B) shivering, will tend to cease, and be followed by the onset of apathy.
C) profuse sweating.
D) the appearance of intense shivering.

A slight lack of coordination which can make it difficult to carry out delicate and precise movements occurs when the level of alcohol in the blood is exceeding:

A) 0.05 % blood alcohol.
B) % blood alcohol.
C) 0.15 % blood alcohol.
D) % blood alcohol.

Hepatitis can be passed through:

A) food or water which has been contaminated.
B) spores via a puncture in the skin.
C) insect bites.
D) droplets in the air cause by the breath of an infected person.

The object of the lumbar support is to:

A) to avoid neck pain.
B) distribute pressure evenly between the discs of the back.
C) to keep the natural curvature of the back bone and to concentrate pressure to the upper back.
D) to keep the natural curvature of the back bone and to concentrate pressure to the lower back.

Adverse effects of carbon monoxide increase as:

A) relative humidity decreases.
B) air pressure increases.
C) altitude increases.
D) altitude decreases.

Glaucoma is characterised by:

1. disturbed light adaptation
2. progressive narrowing of the visual field
3. insidious onset and concealed progression
4. an increase in intra-ocular pressure

A) 2, 3 and 4 are correct ,1 is false
B) 1, 2 and 3 are correct, 4 is false
C) 1, 2, 3 and 4 are correct
D) 1, 3 and 4 are correct, 2 is false

Presbyopia is:

A) myopia.
B) short sightedness.
C) far sightedness linked with age.
D) high intraocular pressure.

REM (or Paradoxical Sleep) refreshes the ... whereas slow wave sleep revitalises the...

A) brain; body
B) STM; LTM
C) body; brain
D) LTM; STM

Which of the following is most true?

A) Regular exercise and reduction in caloric consumption are both essential in order to lose weight.
B) Regular exercise is beneficial to general health, and is the only effective way to lose weight.
C) Regular exercise is beneficial to general health, but the most efficient way to lose weight is by reducing caloric consumption.
D) Regular exercise is an impediment to losing weight since it increases the metabolic rate.

Which of the following statements about alcohol is true?

A) Alcohol will lower the tolerance for hypoxia
B) A blood alcohol level of 0.05% leads to unconsciousness
C) A few drinks can make a person sleep better
D) A unit of alcohol is equal to 50 ml of pure alcohol

Cigarette smoking has particular significance to the flyer, because there are long-term and short-term harmful effects. From cigarette smoking the pilot can get:

A) a mild carbon dioxide poisoning increasing the pilot's tolerance to hypoxia.
B) a suppressed desire to eat and drink.
C) a mild carbon monoxide poisoning decreasing the pilots tolerance to hypoxia.
D) a mild carbon monoxide poisoning increasing the pilot's tolerance to hypoxia:

The organ which eliminates alcohol from the body is/are the:

A) Kidneys
B) Pancreas
C) Spleen
D) Liver

The carcinogen (a substance with the ability to produce modifications in cells which develop a cancer) in the bronchi of the lungs is:

A) nicotine.
B) lead.
C) carbon monoxide.
D) tar.

We can observe the following in relation to a state of hypothermia:

A) reasoning problems as soon as body temperature falls below 37° C.
B) greater capacity for adaptation than in a hot atmosphere.
C) a rapid fall in ambient temperature.
D) a substantial increase in internal body temperature whereas peripheral temperature at the skin is stable.

DCS is caused by:

A) Increased carbon dioxide in the blood.
B) Nitrogen coming out of solution in the blood.
C) Increased gas within the joints.
D) Decrease of oxygen in the blood.

Which of the following mechanisms regulate body temperature when explored to extreme high environmental temperatures?

1. Shivering.
2. Vasoconstriction of peripheral blood vessels.
3. Sweating.
4. Vasodilation of peripheral blood vessels.

A) 1, 3, 4
B) 3, 4
C) 1
D) 2, 3

Alcohol, even when taken in minor quantities:

A) will have no effect at all.
B) will stimulate the brain, making the pilot resistant to hypoxia.
C) can make the brain cells to be more susceptible to hypoxia.
D) may improve the mental functions, so that the symptoms of hypoxia are much better to be identified.

Barotrauma of the middle ear most likely will occur:

A) when descending rapidly.
B) when climbing.
C) in sudden steep turns.
D) during a long high altitude flight.

A male is considered obese if his BMI is ... and a woman underweight if her BMI is:

A) 30 and over under 20.0.
B) 29.0 and over under 18.0.
C) Over 30.0 under 19.0.
D) Over 29.0 under 19.0.

How can a poor diet influence vision?

A) A correct blood sugar level is an essential element in the build-up of conedopsin (visual purple) in the cone cells; without this, night vision is degraded.
B) Vitamin D is essential for night vision.
C) Vitamin A is an essential element in the build-up of rhodopsin (visual purple); without this, night vision is degraded.
D) Vitamin C is an essential element in the build-up of conedopsin (visual purple) in the cone cells. Without this, night vision is degraded.

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101. The metabolism of alcohol is:

A) influenced by time.
B) quicker when the body gets used to alcohol.
C) accelerated by drinking coffee.
D) improved by the use of over-the-counter medication.

The consumption of medicines or other substances may have consequences on qualification to fly for the following reasons:

1. The disease requiring a treatment may be cause for disqualification.
2. Flight conditions may modify the reactions of the body to a treatment.
3. Drugs may cause adverse side effects impairing flight safety.
4. The effects of medicine do not necessarily immediately disappear when the treatment is stopped.

A) 1, 2 and 3 are correct, 4 is false.
B) Only 2 is false.
C) 1, 2, 3 and 4 are correct.
D) 3 and 4 are false, 1 and 2 are correct.

Noise Induced Hearing Loss (NIHL) is:

A) caused by hearing deterioration as part of the process of ageing.
B) governed by intensity and duration of noise in excess of 90 dB.
C) governed by the intensity of noise above the 103 dB level.
D) caused by damage to the eardrum or ossicles by noise above 90 dB.

Astigmatism is normally caused by:

A) A lack of vitamin A
B) A mis-shapened cornea
C) A lack of accommodation
D) A lack of empty field

Saccade takes approximately:

A) 0.5 second
B) 0.1 second
C) 0.2 second
D) 0.3 second

The Frenzel Manoeuvre or Valsalva Manoeuvre is associated with:

A) the stroboscopic effect.
B) aerobatics.
C) Barotrauma.
D) g forces.

Slow wave sleep is a term used for:

A) Stage 3 and 4.
B) Stage 4 and REM.
C) Stage 1 and 2.
D) Stage 2 and 3.

Having donated blood aircrew should:

A) rest supine for about 15 - 20 minutes, drink plenty of fluids and not fly for 24 hours.
B) rest supine for at least 1 hour, drink plenty of fluids and not fly for 48 hours.
C) aircrew are prohibited from donating blood.
D) aircrew are not encouraged to give blood.

Alcohol, when taken simultaneously with drugs, may:

A) increase the rate of alcohol elimination from the blood.
B) compensate for side effects of drugs.
C) show undesired effects only during night flights.
D) intensify the effects of the drugs.

It is inadvisable to fly when suffering from a cold. The reason for this is:

A) although the change in air pressure during a climb at lower altitudes is very small, it increases rapidly at high altitudes. If the tissue in the Eustachian tube of the ear is swollen, gentle descents at high altitude would result in damage to the ear dru
B) swollen tissue in the inner ear will increase the rate of metabolic production resulting in hyperventilation
C) because it will seriously affect peripheral vision
D) the tissue around the nasal end of the Eustachian tube is likely to be swollen thus causing difficulty in equalising the pressure within the middle ear and the nasal/throat area. Pain and damage to the eardrum can result, particularly during fast descents

What is a normal blood pressure?

A) Diastolic 80 mm Hg Systolic 40 mm Hg
B) Diastolic 40 mm Hg Systolic 80 mm Hg
C) Diastolic 120 mm Hg Systolic 80 mm Hg
D) Diastolic 80 mm Hg Systolic 120 mm Hg

Basic Aviation Psychology:

Human Information Processing:

Approximately how many chunks of information can an average person process at one time:

A) one.
B) ten.
C) three.
D) seven

Motor programmes are:

A) rules that enable us to deal with preconceived situations.
B) stored routines that enable patterns of behaviour to be executed without continuous conscious control.
C) stored routines that enable patterns of behaviour to be executed only under continuous conscious control.
D) rules that enable us to deal with novel situations.

Which of the following are the most favourable solutions to manage phases of reduced or low vigilance (hypovigilance)?

1. Healthy living.
2. Use of amphetamines.
3. Reducing the intensity of the light.
4. Organising periods of rest during the flight.

A) 1, 3
B) 1, 4
C) 3,4
D) 1, 2

Which of the following statements concerning hypovigilance is correct? Hypovigilance:

A) essentially occurs several minutes after the intense take-off phase.
B) may occur at any moment of the flight.
C) tends to occur at the end of the mission as a result of a relaxation in the operators attention.
D) only affects certain personality types.

The cocktail party effect is:

A) the ability to pick up relevant information unintentionally.
B) the ability to drink too much at social gathering.
C) the tendency to believe information that reinforces our mental model of the world.
D) the tendency not to perceive relevant information.

The common illusion created by linear acceleration or deceleration is:

A) a banking sensation due to disturbances in the fluid circulation in the inner ear
B) a pitch up feeling when the aircraft accelerates
C) a combined pitch up and banking sensations
D) a feeling that the aircraft has started to pitch up when the aircraft decelerates, causing an automatic attempt to push the nose down

The first stage in the information process is:

A) perception.
B) sensory stimulation.
C) the recognition of information.
D) selective attention.

Consider the following two statements:

1. Lively information is easier to take into consideration for creating a mental picture than boring information.
2. The sequence in which information is offered is also important for the use the pilot makes of it.

A) 1 is correct.
B) 1 and 2 are both not correct.
C) 1 and 2 are both correct.
D) 2 is correct.

Consider the following two statements:

1. Adaptation is a new state of equilibrium after having coped with a stressful situation.
2. An individuals prospect of the situation and his/her abilities to cope with it will determine the type and strength of stress.

A) 1 and 2 are both false
B) 1 is correct, 2 is false
C) 1 is false, 2 is correct
D) 1 and 2 are both correct

Give an example of vigilance:

A) A vigilant crewmember notifies the entire crew of a problem.
B) Dividing your attention between technical and non-technical duties.
C) An example of vigilance would be to continuously scan for other aircraft during a long flight.
D) An example of vigilance would be when a crewmember plans ahead and is anticipating what will or could happen.

According to Jens Rasmussen, riding a bicycle is:

A) rule based behaviour requiring conscious thought.
B) rule based behaviour not requiring conscious thought.
C) skill based behaviour.
D) knowledge based behaviour.

How can optimum arousal and vigilance be obtained?

A) Experts believe that arousal and performance are related by an inverted V-shaped curve. Deep sleep is at one end, extreme panic the other. Both result in poor performance. Optimum arousal and vigilance are obtained at the mid-point between the two.

B) Optimum vigilance, in its most acute forms, is an extremely agitated condition. It is normally only obtained in a state of panic or near panic.

C) Experts believe that arousal and performance are related by an inverted V-shaped curve. Both result in poor performance. Optimum arousal and vigilance are obtained during low workload.

D) Optimum arousal and vigilance are best obtained among two assertive crewmembers.

What are the various factors which guide attention?

1. The level of automation of behaviour
2. Response time
3. The salience of the information
4. Expectations

A) 1, 3, 4.

B) 4.

C) 1.

D) 2, 4.

Which of the following characteristics apply to short-term memory?

1. It is limited in time and size.
2. It is unlimited in time and limited in size.
3. It is stable and insensitive to disturbances.
4. It is limited in time and unlimited in size.

A) 1,3

B) 2,3

C) 3,4

D) 1

What are the best visual cues for height during the round out?

A) horizon relative to the aircraft nose

B) velocity and the colour of passing objects

C) apparent speed and texture of ground objects

D) the horizon with respect to objects on the windscreen

If the pilot of an aircraft approaches a runway that is wider than normal, one of the possible consequences could be that:

A) he would flare at a too low altitude.

B) he would choose a visual touch down point too far into the runway.

C) the aircraft would touch down after he expects to.

D) he would touch down with excess speed.

The quality of learning:

A) depends on long-term memory capacity.

B) is independent of age.

C) is promoted by feedback on the value of ones own performance.

D) is independent of the level of motivation.

Learning is called each lasting change of behaviour due to:

A) maturation.
B) practice and experience.
C) innate mechanisms.
D) drug influence.

A selective attention mechanism is required:

A) because the capacity of the long term memory is limited.
B) because of limitations in our store of motor programmes.
C) because of the limitations of the sense organs.
D) because of the limited capacity of the central decision maker and working memory.

Which of the following are primary sources of motivation in day-to-day professional life?

1. Being in control of ones own situation
2. Fear of punishment
3. Success (achievement of goals)
4. Social promotion, money

A) 1, 2, 3
B) 3, 4
C) 2, 4
D) 1, 2, 3, 4

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21. What is hypovigilance?

A) A rapid breathing pattern caused by fear.
B) Hypovigilance (hypervigilance) is, in its most acute forms, an extremely agitated state of panic or near panic. It is characterised by indiscriminate attention to all sports of minor and major threat cues, as the person frantically searches for means of e
C) A rapid breathing pattern caused by stress.
D) Both B and C are correct.

Mental training, mental rehearsal of cognitive pertaining is called the inner, ideomotor simulation of actions.

A) It is most important for self control.
B) It is most important for the acquisition of complex perceptual motor skills.
C) It is more effective than training by doing.
D) It is most effective, if it is practiced on an abstract level if imagination.

Divided attention is the ability:

1. To execute several mental activities at almost the same time (i.e. when switching attention from outside the aircraft to the airspeed indicator on the instrument panel).
2. To monitor the progress of a motor programme (i.e. flying or taxiing the airplane) on a relatively subconscious level, while making a radio call at the same time (requiring a rather conscious level).
3. To select information and check if it is relevant to the task in hand. At the same time no other operation can be performed.
4. To delegate tasks to the co-pilot while concentrating on the procedures.

A) Only 3 is false
B) 1 and 3 are correct, 2 and 4 are false
C) 1,2 and 3 are correct, 4 is false
D) 1 and 2 are correct, 3 and 4 are false

To facilitate and reduce the time taken to access information in long-term memory, it is helpful to:

A) avoid to rehearse information which we know we will need soon.
B) learn and store data in a logical and structured way.
C) mentally rehearse information before it is needed
D) structure irrelevant information as much as possible before committing it to memory.

Illusions of interpretation (cognitive illusions) are:

A) solely induced in the absence of external reference points.
B) associated with the task of mental construction of the environment.
C) due mainly to a poor interpretation of instrumental data.
D) due mainly to a conflict between the various sensory systems.

In the short-term-memory, information is stored for approximately

A) 1 hour
B) 5 minutes
C) a couple of days
D) 20 seconds

The maximum number of unrelated items that can be stored in working memory is:

A) about 30 items.
B) unlimited.
C) very limited - only 3 items.
D) about 7 items.

You are flying from London to Oslo as commander. One of your passengers suffers a heart attach during flight, and the situation is life threatening for him. You evaluate the situation, and decide to divert to Amsterdam. What type of behaviour is this, according to Jens Rasmussen?

A) Rule based behaviour.
B) System based behaviour.
C) Knowledge based behaviour.
D) Skill based behaviour.

Working memory enables us, for example:

A) to remember a clearance long enough to write it down.
B) to store a large amount of visual information for about 0.5 seconds.
C) to ignore messages for other aircraft.
D) to remember our own name.

Which of the following statements about long-term memory are correct?

1. Information is stored there in the form of descriptive, rule-based and schematic knowledge.
2. The period of time for which information is retained is limited by the frequency with which this same information is used.
3. It processes information quickly and has an effective mode of access in real time.
4. Pre-activation of necessary knowledge will allow for a reduction in access time.

A) 1 and 4 are correct.
B) 1 and 2 are correct.
C) 2, 3 and 4 are correct.
D) 2 and 4 are correct.

Information stays in the short-term memory:

A) less than 1 second.
B) from 5 to 10 minutes.
C) about 20 seconds.
D) around 24 hours.

Whilst flying a coordinated turn, most of your activity is:

A) skill based behaviour.
B) coping behaviour.
C) knowledge based behaviour.
D) rule based behaviour.

You are carrying out a visual approach to a runway which slopes upwards away from the touchdown end. What is the main risk in this case?

A) Landing heavy due to an apparent decrease in runway width.
B) Landing short due to over-correcting for an apparent height increase.
C) Landing heavy due to an apparent increase in runway width.
D) Landing long due to over-correcting for an apparent height decrease.

The main limit(s) of long-term memory is (are):

A) Data retrieval as a result from a loss of access to the stored information
B) the quantity of data which may be stored
C) the data storage time
D) the instantaneous inputting in memory of all information collected during the day, which comes to saturate it

What is meant by divided attention?

A) Sampling of stimuli, and selection of one of them for further processing.
B) Focusing on non-essential information.
C) None of the above is correct.
D) Switching of attention from one set of stimuli to another.

As a pilots workload is increased, what happens to his performance level?

A) The qualitative overload level is easily reached.
B) The standard of performance increases until an optimum level of workload and performance is achieved.
C) More information is by-passed due to the focusing of attention.
D) The standard of performance decreases rapidly due to the previously low level of arousal.

The readiness for tracing information which could indicate the development of a critical situation:

A) is necessary to maintain good situational awareness.
B) is responsible for the development of inadequate mental models of the real world.
C) makes no sense because the human information processing system is limited anyway.
D) is dangerous, because it distracts attention from flying the aircraft.

Select the correct definition of vigilance:

A) A vigilant task is one that requires assertive behaviour.
B) A vigilant task is one that requires consistent monitoring without lapses in attention. Vigilance is simply defined as sustained attention.
C) The reception of the elements in the environment within a volume of space and time, the comprehension of their meaning and the projection of their status in the near future.
D) Vigilance has always been important in aviation A vigilant is one that does not require consistent monitoring without lapses in attention.

What are the main factors which bring about reduced or low vigilance (hypovigilance)?

1. The monotony of the task.
2. Tiredness the need for sleep.
3. A lack of stimulation.
4. Excessive stress.

A) 1, 3
B) 1, 2, 3
C) 2, 4
D) 3, 4

The development of procedures makes pilots more effective and more reliable in their actions. This is called:

A) knowledge-based behaviour.
B) mental model.
C) procedural consistency.
D) procedural confusion.

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41. What is meant by Episodic memory?

A) memory of information, held in the long term memory.
B) memory of experienced events, held in the long term memory.
C) memory of information, held in the short term memory.
D) memory of events, held in the short term memory.

According to Wickens theory, the human brain has:

A) unlimited information-processing resources.
B) cognitive resources which are centred on action.
C) different reservoirs of resources depending on whether one is in the information-gathering, information- processing or action phase.
D) processing capabilities which function at peak level when different tasks call for the same resources.

In an abnormal situation the pilot has an apparently correct explanation for the problem. The chance that he/she now ignores or devalues other relevant information, not fitting into his/her mental picture is:

A) not applicable with old and experienced pilots.
B) increasing.
C) the same, no matter if he/she has already made up his/her mind.
D) decreasing.

Suppose you make an approach to a runway which is narrower than standard. Which of the following errors are you likely to commit?

A) Fly with a too high approach speed, as a narrow runway requires lower speed.
B) Initiate a flare too late.
C) Not following the VASIS.
D) Initiate a flare too early.

What is the main adverse effect of expectations in the perception mechanism?

A) Expectations often guide the focus of attention towards a particular aspect, while possible alternates are neglected.
B) The attention area is enlarged, thus it will lead to an uncertainty in regard to necessary decisions.
C) The unconscious mechanism of attention leads to focus on all relevant information.
D) They always lead to routine errors.

The ability of detecting relevant information which is not presented in an actively monitored input channel is known as:

A) perception.
B) appreciation.
C) sensation.
D) attention.

Getting uneasy will effect:

1. attention
2. concentration
3. memory
4. prudence

A) 1, 2, 3 and 4 are correct.
B) 1 and 3 are correct.
C) 2, 3 and 4 are correct.
D) 1 and 2 are correct.

Long-term memory is an essential component of the pilots knowledge and expertise.

A) The recovery of information from long-term memory is immediate and easy.
B) It is desirable to pre-activate knowledge stored in long-term memory to have it available when required.
C) The capacity of long-term memory is limited.
D) Long-term memory stores knowledge on a temporary basis.

What are the main strategies for adapting to time constraints?

A) The preparation of 1 action and the prioritisation of tasks.
B) The preparation of action and the application of procedures.
C) The preparation of action and time management.
D) The prioritisation of tasks and the application of procedures.

Which of the following tasks are possible to do simultaneously without mutual interference?

A) Read and listen attentively.
B) Maintain manual straight and level flight and solve a problem.
C) Listen attentively and solve a problem.
D) Talk and rehearse a frequency in working memory.

Motivation is a quality wich is often considered vital in the pilots work to maintain safety:

A) a high degree of motivation lowers the level of vigilance.
B) however, excessive motivation leads to stress which adversely affects performance.
C) motivation reduces the intensity of sensory illusions.
D) a high degree of motivation makes it possible to make up for insufficient knowledge in complete safety.

The gestalt laws formulates:

A) basic principles regarding to the relationship between motivation and performance.
B) basic principles governing the effects of habit and experience.
C) basic principles governing how objects are mentally organized and perceived.
D) basic principles governing the relationship between stress and performance.

The human information processing system is highly efficient compared to computers because of its:

A) independency from attention.
B) flexibility.
C) speed.
D) working memory capacity.

How can the process of learning be facilitated?

A) By punishing the learner for unsuccessful trials.
B) By reinforcing errors.
C) By reinforcing successful trials,
D) By increasing the psychological pressure on the student.

Mental schemes correspond to:

A) memorised procedures which develop and change rapidly during change-over to a new machine.
B) memorised representations of the various procedures and situations which can be reactivated by the pilot at will.
C) daily planning of probable dangerous situations.
D) the memorisation of regulatory procedures associated with a particular situation.

Under what circumstances will a pilot change from automated level to rule-based level?

A) Failure of all the known rules.
B) When detecting, that an automated behaviour will no longer lead to the intended outcome.
C) An automated cognitive check procedure.
D) The appearance of a situation or problem which is unknown and completely new.

In problem-solving, what determines the transition from rules-based activities to a knowledge-based activity?

A) The unsuitability of the automated action.
B) Knowledge of rules which apply to the problem posed.
C) Attention capture.
D) The unsuitability of the known rules for the problem posed.

With regard to short-term memory, we can say that:

A) it is made up of everyday information for immediate use, and is limited in its capacity for storing and retaining data.
B) it is made up of everyday information for immediate use, and is limited in terms of the time for which it retains data but not in its storage capacity.
C) it is a stable form of working memory, and thus not very sensitive to any disturbance.
D) it mainly contains procedural knowledge.

The acquisition of expertise comprises three stages (Anderson model):

A) cognitive, associative and knowledge.
B) associative, autonomous and expert.
C) automatic, cognitive and knowledge.
D) cognitive, associative and autonomous.

Working memory:

A) is sensitive to interruptions which may erase all or some of its content.
B) is unlimited in size.
C) varies considerably in size between an expert pilot and a novice pilot.
D) is unlimited in duration.

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61. A sudden change from climb to straight and level flight can give you an illusion of:

A) tumbling backwards
B) a nose up attitude
C) a nose low attitude
D) turning to the left

What is divided attention?

A) Ease of concentrating on a particular objective.
B) Difficulty of concentrating on a particular objective.
C) The adverse effect of motivation which leads to ones attention being dispersed.
D) Alternative management of several matters of interest.

The choice of the moment you select flaps depending on situation and conditions of the landing is:

A) knowledge based behaviour.
B) skill based behaviour.
C) rule based behaviour.
D) pressure based behaviour.

What are main signs indicating the loss of vigilance?

1. Decrease in sensory perception
2. Increase in selective attention
3. Sensation of muscular heaviness
4. Decrease in complacency

A) 2,3
B) 2,4
C) 1,3
D) 1,4

Mental training is helpful to improve flying skills:

A) only at a certain level of flying experience.
B) only for instructor pilots.
C) at all levels of flying proficiency.
D) only for student pilots.

The capacity of the short-term memory is

A) very limited - only one item
B) about 30 items
C) about 7 items
D) unlimited

In order to provide optimum human performance it is advisable to:

A) plan future actions and decisions at least a couple of days in advance.
B) plan a maximum of objectives and non-automated actions.
C) establish strategies for planning, automating and managing resources (in real time).
D) avoid powerful behaviour expedient of automating tasks.

Conscious perception:

A) relies upon the development of intuition.
B) involves the transfer of information from the receptor to the brain only.
C) is a mental process involving experience and expectations.
D) relates to the correct recognition of colours.

Human Error and reliability:

What are the various means which allow for better error detection?

1. Improvement of the man-machine interface.
2. Development of systems for checking the consistency of situations.
3. Compliance with cross-over redundant procedures by the crew.
4. Adaptation of visual alarms to all systems.

The correct statement(s) is (are):

A) 2, 3 and 4
B) 3 and 4
C) 1, 2 and 3
D) 1 and 3

What are the main characteristics of active errors? They:

1. are detectable only with difficulty by first-line operators
2. have rapid and direct consequences on the action in progress
3. are down to first-line operators
4. have an impact on the overall action whose timing may be affected significantly

A) 3, 4
B) 1, 4
C) 1, 2
D) 2, 3

Which of the following statements best fits the definition of an active error? Active error is:

A) essentially results from the application of a bad rule or the poor application of a good rule by airplane designers
B) produced either by a front-line operator or by a remote operator and results in a hidden or latent consequence at a specific moment of the action
C) rare in front-line actions and difficult to detect owing to the fact that it usually occurs in a complex system of uncontrolled and involuntary deviations
D) produced by the operator and can be rapidly detected via the effects and consequences which it induces on the overall action

Which of the following statements fits best the concept of latent error? Latent errors:

A) re rarely made by front-line operators and are consequently readily identified and detected by the monitoring, detection and warning links
B) rapidly may be detected via their immediate consequences on the action in progress.
C) have been present in the system for a certain length of time and are difficult to understand as a result of the time lag between the generation and the occurrence of the error.
D) are mainly associated with the behaviour of front-line operators and are only detected after advanced problem-solving.

Select the links in the error chain:

A) Ambiguity, distractions, confusion, no-one flying, no-one looking outside, fatigue, non-standard procedures, violating minima, unresolved discrepancies, departure from SOP and incomplete communications.

B) Ambiguity, distractions, confusion, no-one flying, no-one looking outside, non-standard procedures, violating minima, unresolved discrepancies, departure from SOP and incomplete communications.

C) Ambiguity, distractions, confusion, no-one flying, no-one looking outside, non-standard procedures, violating minima, departure from SOP and incomplete communications.

D) Ambiguity, distractions, no-one flying, no-one looking outside, non-standard procedures, violating minima, unresolved discrepancies, departure from SOP and incomplete communications.

Give an example of random error:

A) The rifle shoots on a target has not hit the centre. Some hits are too high and some too low.

B) A pilot tends to forget to turn off the beacon after his/her flights.

C) The rifle shoots on a target is to right side of the centre.

D) A pilot forgot to set the correct altimeter setting causing a controlled flight into terrain (CFIT) accident.

Errors which occur during highly automated actions may result from:

1. The capture of a poor action subprogram.
2. A mistake in the decision making process.
3. The application of a poor rule.
4. An action mode error.

A) 3, 4

B) 1, 2

C) 1, 4

D) 2, 3, 4

Why must flight safety considerations consider the human error mechanism?

1. It is analysis of an incident or accident which will make it possible to identify what error has been committed and by whom. It is the process whereby the perpetrator is made responsible which may lead to elimination of the error.
2. If we have a better understanding of the cognitive error mechanism, it will be possible to adapt procedures, aircraft interfaces, etc.
3. It is error management procedure which enables us to continuously adjust our actions. The better we understand the underlying mechanism of an error, the better will be our means for detecting and adapting future errors.
4. Since error is essentially human, once it has been identified by the use of procedures, a person will be able to anticipate and deal with it automatically in the future. The correct statement(s) is (are):

A) 2 and 3

B) 2 and 4

C) 1 and 4

D) 3 and 4

How can man cope with low error tolerant situations?

A) By increasing error detection in all circumstances
B) By randomly applying a combination of optimum detection, warning and monitoring systems
C) By constantly complying with cross-over verification procedures (cross monitoring)
D) By generally avoiding situations in which tolerance to error is low

It is desirable to standardize as many patterns of behaviour (operating procedures) as possible in commercial aviation mainly because:

A) such behaviour reduces errors even under adverse circumstances.
B) it makes the flight deck easier to design.
C) this reduces the amount of training required.
D) this lowers the ability requirement in pilot selection.

According to Rasmussen' s model, errors are of the following type (s) in skill-based control mode:

A) creative errors.
B) handling errors.
C) knowledge errors.
D) routine errors.

The human performance is generally:

A) better very early in the morning.
B) always better in the evening than in the morning.
C) constant throughout the day.
D) better when relaxed, independent of the period of day.

Select the most correct statement about human error.

A) The skilled pilot will not make human errors.
B) To minimise human error, one must first understand its nature.
C) Human error can be eliminated.
D) The definition human error, as used to improve aviation safety, can put the blame on the individuals.

Which of the following human error rates can be described as both realistic and pretty good, after methodical training:

A) 1 in 10000 times.
B) 1 in 1000 times.
C) 1 in 100 times.
D) 1 in 100000 times.

How can the error chain help pilots to prevent accidents?

A) The error chain can help flight crew minimise the effects after a serious error has caused a problem.
B) Recognition of the presence of the elements of the error chain will eliminate the risk of an accident.
C) Recognition of the presence of the elements of the error chain does not - in itself - eliminate the risk of an accident. Instead, it serves as a warning to the crew that they must take correct action to manage the progress of flight in the face of rising
D) Correct use of the error chain will - in itself - prevent most accidents.

Environmental capture is a term used to describe which of the following statements?

1. The tendency for a skill to be executed in an environment in which it is frequently exercised, even if it is inappropriate to do so.
2. The tendency for a skill acquired in one aircraft type to be executed in a new aircraft type, even if it is inappropriate to do so.
3. The tendency for people bo behave in different ways in different social situations.
4. The gaining of environmental skills

A) 1 and 2 are correct.
B) 4 is correct.
C) 2 and 3 are correct.
D) 1, 2 and 3 are correct.

The performance of the man machine system is above all:

A) a combination which is based on decreasing the pilots workload and increasing his time for supervision
B) a combination which must make the pilot available for the sphere in which he is most qualified, namely checking departures from the normal operating range
C) a combination in which the pilot must keep the main repetitive tasks and automated systems under his control in line with rule-based behaviour
D) a balanced combination between someone actively engaged in his work and automated systems which serve to control the pilots workload

When can a system be said to be tolerant to error? When:

A) its safety system is too permeable to error.
B) its safety system has taken account of all statistically probable errors.
C) the consequences of an error will not seriously jeopardise safety.
D) latent errors do not entail serious consequences for safety.

What are the main consequences of latent errors? They:

1. Remain undetected in the system for a certain length of time.
2. May only manifest themselves under certain conditions.
3. Are quickly detectable by the front-line operator whose mental schemas on the instantaneous situation filter out formal errors.
4. Lull the pilots into security.

The correct statement(s) is (are):

A) 1 and 2
B) 1, 2 and 4
C) 2, 3 and 4
D) 1 and 3

The descriptive aspect of errors according to Hollnagels model describes various directly observable types of erroneous actions which are:

1. Repetition and omission.
2. The forward leap and the backward leap.
3. Intrusion and anticipation.
4. Intrusion.

A) 1,2,4
B) 1,2,3
C) 1,3
D) 2,4

With regard to the average influence of age on pilot performance, it may be said that age:

A) has a major impact owing to the impairment of memory.
B) increases in impact as speed of thought and memory deteriorate.
C) sharply reduces performance without, however, affecting cognitive capabilities.
D) has little impact when the pilot is able to compensate for it by his/her flight experience.

Decision making:

Which of the following statements is correct regarding decision making?

A) Deciding means applying an automatic procedure.
B) Deciding means being able to come up with original solutions.
C) Deciding means choosing between alternatives.
D) Deciding means imposing one's point of view.

To avoid wrong decisions by the pilot, an aircraft system should at least be able to:

A) correct the deviation
B) report its malfunction
C) report the deviation
D) tolerate the deviation

Many pilots think up systems to deal with affairs so they do not have to think up every time what they have to do:

A) this has to be advised against for it reduces flexibility at a moment a problem has to be solved by improvisation.
B) this is dangerous for every situation is different.
C) this has to be rejected for the company draws the rules and the procedures they have to comply with.
D) this has to be positively appreciated for it increases consistency in action.

Judgement is based upon:

A) the development of skills from constant practice of flight manoeuvres.
B) a decision making process involving physical sensations and their.
C) the ability to interpret the flight instruments.
D) a process involving a pilots attitude to take and to evaluate risks by assessing the situation and making decisions based upon knowledge, skill and experience.

You are transporting a passenger who has to be at a certain destination for a meeting. The weather forcast at destination tends to be much worse than expected, so you consider to divert. The businessman offers you money if you manage to land there at any case. What is your appropriate way of action? You will:

A) continue and think about the nice things you can buy from the money.
B) see what you can do and ask the co-pilot to tolerate any decision.
C) divert in any case to demonstrate who1 s the man in charge aboard.
D) decide to divert if you think it is necessary.

Decision-making is a concept which represents:

A) an automatic process of selection from among the various solutions to a given problem.
B) an automated or automation-like act of applying defined procedures.
C) a spontaneous act of seeking the most effective solution in a given situation when faced with a defined problem.
D) a voluntary and conscious process of selection, from among possible solutions, for a given problem.

Decision-making can be influenced by the following factors:

1. people tend to conform to opinions expressed by a majority within the group they belong to
2. people always tend to keep the future decisions in line with those their superiors have made in the past
3. people more easily tend to select data which meet the expectations
4. people hardly base decisions on their personal preferences but rather on rational information

A) 1,3
B) 1,4
C) 2,4
D) 2,3

What happens in problem-solving when the application of a rule allows for the situation to be resolved?

A) A second monitoring rule must be applied.
B) Actions return to an automatic mode.
C) A switch is made to knowledge mode in order to refine the results.
D) A switch is made to knowledge-based mode in order to continue monitoring of the problem.

In terms of decision-making, the intention to become integrated into the team, to be recognised as the leader or to avoid conflicts may lead to:

A) the suggestion of a sequential solution in which everyone can contribute what he/she knows
B) an authoritarian approach thus demonstrating ones own ability to lead
C) the improvement of internal risk assessment capabilities
D) the attempt to agree on decisions made by other crew members

Which biases relate to human decision making?

1. Personal experience tends to alter the perception of the risk of an event occurring.
2. There is a natural tendency to want to confirm our decision even in the face of facts which contradict it.
3. The group to which an individual belongs tends to influence the particular decision.
4. There is natural tending to select only objective facts for decision-making purposes

A) 1,2
B) 1,2,4
C) 3,4
D) 1,2,3

When a pilot is facing a problem during flight he should:

A) always make up his mind quickly to give himself as much spare time as possible
B) avoid making up his mind until the very last minute
C) take as much time as he needs and is available to make up his mind
D) make up his mind before consulting other crew members

Habits and routine can influence decision-making in a way that:

A) a tendency to select the most familiar solution first and foremost, sometimes to the detriment of achieving the best possible result.
B) professional pilots will never question established procedures.
C) one always wants to see previous experience confirmed by new decisions.
D) one always selects a choice in accordance with the company's usual practices.

Once a pilot has developed a certain way of thinking about a problem he will probably:

A) find it difficult to get out of that way of thinking and difficult to try a different interpretation of the data.
B) find it easy to interpret the data in different ways.
C) find it difficult to stick to his/her interpretation of the data.
D) find it impossible to get out of that way of thinking, whatever happens.

Decision-making results in:

A) a choice between different solutions for achieving a goal.
B) a choice always based on the experience of the PIC.
C) a subjective choice concerning applicable solutions.
D) an objective choice concerning applicable solutions for a given end.

Which of the following characteristics form part of decision-making on the flight deck?

A) A group decision must always be established prior to action.
B) A decision is only valid in a defined and delimited time.
C) A good decision can always be reversed if its result does not come up to expectations.
D) A good decision depends on analysis of the situation.

Which of the following answers includes situational awareness skills?

A) Defend, maintain and insist.
B) Monitor, evaluate and anticipate.
C) Assertiveness.
D) Combination of tasks and relationships.

An excessive need for safety:

A) is the most important attribute of a line pilot.
B) hampers severely the way of pilot decision making.
C) is absolute necessary for a safe flight operation.
D) guarantees the right decision making in critical situations.

In decision-making, the selection of a solution depends:

1. on objective and subjective criteria
2. on the objective to be achieved
3. on the risks associated with each solution
4. above all on the personality of the decision-maker

A) 1,3
B) 4
C) 1,2,4
D) 1,2,3,4

The decision making in emergency situations requires firstly:

A) informing ATC thoroughly about the situation
B) distribution of tasks and crew coordination
C) the whole crew to focus on the problem
D) speed of reaction

Check the following statements:

1. The first information received determines how subsequent information will be evaluated.
2. If one has made up ones mind, contradictory information may not get the attention it really needs.
3. With increasing stress, channelising attention is limiting the flow of information to the central decision maker (CMS).

A) 1 and 3 are correct.
B) 1 and 2 are correct.
C) 2 and 3 are correct.
D) 1, 2 and 3 are correct.

21.The confirmation bias of decision making is:

A) a tendency to look for facts that confirm expectations before implementing one's decision.
B) a tendency not to look for information which would reassure oneself about a decision.
C) a tendency to ignore that information which indicates that a decision is poor.
D) a tendency not to seek for information which confirms a judgement.

The DECIDE model is based on:

A) preparing decisions often leads to strategies of minimum commitment.
B) owing to great haste, bypassing analysis of the current actual situation in order to apply the decision prepared beforehand.
C) preparing decisions promotes the appearance of inflexibilities.
D) a prescriptive generic model, taking into account the method which seems most likely to come up with the solution.

The assessment of risk in a particular situation will be based on:

A) situational factors only.
B) the emergency checklist only.
C) external factors only.
D) subjective perception and evaluation of situational factors.

Murphy' s law states:

A) If equipment is designed in such a way that it can be operated wrongly, then sooner or later, it will be.
B) Expectation has an influence on perception.
C) Performance is dependent on motivation.
D) Response to a particular stressful influence varies from one person to another.

Which of the following abilities will not improve efficient decision making on the cockpit?

A) Communicational skills and social competence
B) Ability to persuade others to follow the own point of view
C) Ability to search for and examine all available information regarding a situation
D) Ability to think ahead and specify alternative courses of action

Most accidents are mainly caused by lack of:

A) interpersonal relations.
B) good judgement.
C) good maintenance of aircraft.
D) physical skills.

The following course of action roust be taken if gastrointestinal or cardiopulmonary complaints or pain arise before take-off:

1. take the standard medicines and advise the doctor on returning from the flight
2. assess your own ability to fly, if necessary with the help of a doctor
3. if in doubt about fitness to fly - do not fly!
4. reduce the cabin temperature, and drink before you are thirsty so as to avoid dehydration

A) 1, 4
B) 2, 3
C) 1, 2, 4
D) 1, 3

Which problem may be overlooked in the process of making decision?

A) Preparing decisions promotes the appearance of inflexibilities
B) Preparing decisions often leads to strategies of minimum commitment.
C) The captains superior knowledge, justified by his/her status.
D) Owing to great haste, bypassing analysis of the current actual situation in order to apply the decision prepared beforehand.

Avoiding and managing errors cockpit management:

Once detected, an error will result in cognitive consequences which:

A) destabilize cognitive progress and maintain the error.
B) make it possible to modify behaviour with a view to adaptation.
C) have virtually no interaction with behaviour.
D) are prompted by inductive factors.

Synergy is a commonly used term. What does it mean?

A) The output from the group is better than the sum of the output from each individual in the group.
B) It is another word for CRM.
C) Synergy is the same as groupthink.
D) It is another word for group work.

Which of the following solutions represent antidotes to conflicts?

1. Seeking arbitration
2. Actively listening to other people
3. Abandoning facts so as to move the conversation to a more emotional level
4. Becoming aware of cultural influences

A) 2,3,4
B) 1,2,3
C) 1,2,4
D) 2,4

What is meant by feedback in communication?

A) The flight crew do not need to talk all the time because the feedback is automatic
B) The effect of a message is measured and corrected against the original meaning
C) Storing of messages in short time memory is available for later playback
D) Readback of a message is rarely necessary

What does the End Deterioration Effect (Home-itis) mean?

A) The breakdown of crew coordination due to interpersonal tensions between captain and co-pilot
B) The result of a poor pre-flight planning
C) The tendency to sudden, imperceptible errors shortly before the end of a flight
D) The potential risk of loosing orientation after flying in clouds

Of the following statements, which apply to coordinated cooperation?

1. It allows for synergy in the actions between the captain and the co-pilot.
2. It represents the simultaneous execution of a single action by the various members of the crew.
3. Communication in this mode has the function of synchronizing actions and distributing responsibilities.
4. Communication must be essentially focussed on temporal and cognitive synchronisation.

The correct statement(s) is (are):

A) 1 and 3.
B) 2 and 3.
C) 1 and 4.
D) 1, 2 and 4.

With regard to communication in a cockpit, we can say that:

A) communication uses up resources, thus limiting the resources allocated to work in progress.
B) communication is always sufficiently automated to enable an activity with a high workload element to be carried out at the same time.
C) all the characteristics of communication, namely output, duration, precision, clarity, etc. are stable and are not much affected by changes in workload.
D) communication is only effective if messages are kept short and sufficiently precise to limit their number.

How effective communication is, depends heavily on ... (Select the most important factor.)

A) the influencing factors.
B) the receiver.
C) the sender.
D) the workload.

The purpose of action plans which are implemented during briefings is to:

A) initiate procedures and reactions for situations that are most likely, risky or difficult during the flight.
B) allow everyone to prepare their own reactions in a difficult situation.
C) activate a collective mental schema with respect to nonprocedural actions to be carried out.
D) define general planning of the flight plan.

Which is an example of an error caused by livewire-hardware interface problems?

A) Mental pressure.
B) A procedures that is not user friendly.
C) Switches, controls or displays with poor design.
D) Noise interference.

What are the communication qualities of a good briefing? A good briefing must:

1. Contain as much information and be as comprehensive as possible.
2. Be of a standard type so that it can be reused for another flight of the same type.
3. Be short and precise.
4. Be understandable to the other crew member(s).

The correct statement(s) is (are):

A) 1 and 4 are correct.
B) 1, 2 and 4 are correct.
C) 2, 3 and 4 are correct.
D) 1 and 2 are correct.

What is meant by groupthink?

A) More or less unconscious support of a solution from group member(s).
B) A democratic decision within the group.
C) Consensus, all members of the group agree with a decision, i.e. this decision is not made by majority against a minority.
D) It is the same as synergy.

What optimises crew co-operation?

1. Sharing and common task.
2. Confidence in each others capability.
3. Precise definition of functions associated with each crew members role.

A) 1, 2
B) 2, 3
C) 1
D) 1, 2, 3

Which of the following responses is an example of habit reversion (negative habit transfer):

A) habitually missing an item on the checklist or missing the second item when two items are on the same line
B) a pilot who has flown many hours in an aircraft in which the fuel lever points forward for the ON position, may unintentionally turn the fuel lever into the false position, when flying a different aircraft, where the fuel lever has to point aft to be in t
C) turning and aircraft to the left when intending to turn it to the right.
D) incorrect anticipation of an air traffic controllers instructions.

What may become the main risk of a laissez-faire cockpit?

A) Lack of communication.
B) Inversion of authority.
C) Appearance of aggressiveness.
D) Disengagement of the co-pilot.

According to Rasmussen' s model, errors in rule-based control mode are of the following type(s):

A) creative errors.
B) routine errors.
C) errors of technical knowledge.
D) handling errors.

Young pilots or pilots with little experience of airplanes differ from experienced pilots in the following way:

A) task for task, an expert's workload is greater than a novices one.
B) inexperienced pilots refer to information more than experts when carrying out the same task.
C) experienced pilots are less routine-minded than young pilots / because they know that routine causes mistakes.
D) flight planning performance decreases with age, and experience is unable to mask this deficiency.

The use of check lists must be carried out in such a way that:

A) their execution is not lumped together with important tasks.
B) their execution must not be done simultaneously with other actions.
C) their execution may be done simultaneously with other actions.
D) it may be rejected since redundancy in the following check list will serve as verification.

Which of the following statements concerning communication is valid?

A) Professional communication means to exchange information as little as possible
B) Communication must take priority over any other flight activity under all circumstances
C) The syntax of communication is of little importance to its success. Only the words uttered are important
D) Professional communication means: using a restricted and specific language, tailored to minimize misunderstandings

What means can be used to combat human error?

1. Reducing error-prone mechanisms.
2. Improving the way in which error is taken into account in-training.
3. Sanctions against the initiators of error.
4. Improving recovery from errors and its consequences.

The combination of correct statements is:

A) 1, 2 and 4.
B) 2, 3 and 4.
C) 3 and 4.
D) 1 and 2.

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21. Which factors can influence effective communications?

A) Workload, noise and voice.
B) Noise and voice.
C) Voice.
D) Workload and voice.

What elements establish synergy within the crew?

A) Synergy must be built up from the start of the mission (briefing) and be maintained until it comes to an end (debriefing).
B) Synergy establishes itself automatically within the crew, right through from briefing to debriefing.
C) Synergy is independent of the natural individual characteristics of the group members (communication, mutual confidence, sharing of tasks, etc.).
D) It is only the captains status which allows the establishment of synergy within the crew.

Pilots are more easily inclined to take greater risks when:

A) they are not constrained by time.
B) they are part of a group of pilots and they feel that they are being observed and admired (e.g. air shows).
C) making a flight over unfamiliar territory.
D) making decisions independently of others.

What is meant by risky shift?

A) the process by which the central decision maker will ignore any information which does not fit the mental model created to explain phenomena
B) a flight or task undertaken at a time when the circadian rhythms are at their point of lowest efficiency
C) the process by which the working memory will off-load information to the long term memory during a high stress situation
D) the tendency for a group to accept a higher degree of risk then any individual in the group

Different non-technical related opinions between pilots from different cultural backgrounds might be seen in connection with:

1. The variations of technical training and skills.
2. Communication problems.
3. Conflicting ways of management.
4. Interpersonal problems.

The combination of correct statements is:

A) 1, 2 and 4 are correct.
B) only 1 is correct.
C) 2 and 3 are correct.
D) 2, 3 and .4 are correct.

Of the following statements, which apply to coordinated cooperation?

1. It allows for synergy in the actions between the captain and the pilot.
2. It represents the simultaneous execution of a single action by the various members of the crew.
3. Communication in this mode has the function of synchronizing actions and distributing responsibilities.
4. Communication must be essentially focussed on temporal and cognitive synchronisation.

The correct statement(s) is (are):

A) 2 and 3
B) 1, 2 and 4
C) 1 and 4
D) 1 and 3

The team spirit of a cockpit-crew most likely depends on:

A) both pilots respecting each other and striving for the same goals.
B) both pilots having the same political and ideological attitude.
C) both pilots wearing the same uniform.
D) both pilots flying together very often for a long period.

What is characterized by a laissez-faire cockpit?

A) A passive approach by the captain allows decisions, choices and actions by other crew members.
B) The high level of independence granted to each member by the captain quickly leads to tension between the various crew members.
C) The captains authority rules all the actions or decisions associated with the situation.
D) Each member carries out actions and makes choices without explicitly informing the other members about them.

Which one of the following statements characterizes a democratic and cooperative leadership style? If conflicts evolve, the leader:

A) tries to clarify the reasons and causes of the conflict with all persons involved.
B) keeps a neutral position and does not participate in arguing.
C) mainly tries to reconcile all persons involved in the conflict and tries to re-establish a nice and friendly atmosphere within the team.
D) decides what to do and pushes his own opinion through.

What are typical consequences of conflicts between crew members?

1. The quality of work performance decreases as a result of the impoverishment of communications.
2. A decrease in the quality of communications
3. In the case of a crew made up of experts, conflicts only result in a deterioration in relations between the individuals.
4. A decrease in the usage of available resources on the flight deck.

The correct statement(s) is (are):

A) 1, 3 and 4 are correct.
B) 2, 3 and 4 are correct.
C) 1, 2 and 4 are correct.
D) 1, 2 and 3 are correct.

Which one of these represents the steepest trans-cockpit authority gradient?

A) The captain makes a decision, orders the copilot, but does not give any explanation to his decision.
B) The captain discusses the situation with his copilot, makes a decision based upon this discussion. The copilot is asked to evaluate the decision.
C) The captain discusses the situation with his copilot, but does never reach a conclusion because of his general indecisiveness. The copilot makes the decision.
D) The captain makes a decision, orders the copilot, and gives an explanation to his decision.

Different non-technical related opinions between pilots from different cultural backgrounds might be seen in connection with:

1. The variations of technical training and skills.
2. Communication problems.
3. Conflicting ways of management.
4. Interpersonal problems.

The combination of correct statements is:

A) 1 and 2 are correct.
B) 2, 3 and 4 are correct
C) 3 and 4 are correct.
D) 1, 2 ,3 and 4 are correct

Success in achieving the objectives of a message requires:

A) different codes between form and meaning
B) the matching of verbal, non-verbal and contextual meanings
C) a form of the message, which should not match the expectation of the receiver
D) differences in contexts for the sender and the receiver

Of the following statements, select those which apply to information.

1. It is said to be random when it is not intended for receivers.
2. It is intended to reduce uncertainty for the receiver.
3. It is measured in bits.
4. Each bit of information reduces uncertainty by a quarter.

The correct statement(s) is (are):

A) 2 and 3 are correct.
B) 1,2,3 and 4 are correct.
C) 2,3 and 4 are correct.
D) only 1 is correct.

An individually given feedback improves communication. Which of the following rules should a feedback comply with?

A) The feedback should only be given if requested by the captain.
B) The feedback should not be referred to a concrete situation.
C) The feedback should always relate to a specific situation.
D) The receiver of the feedback should immediately justify his behaviour.

A study by NASA has examined the relationships between incidents linked with ground-to-crew communication.
Which of the following factors is the main reason for disturbances in the correct reception of a message?

A) Mother tongue differing from working language.
B) Listening errors.
C) Errors in understanding clearance values.
D) Radio failure.

An autocratic cockpit is described by:

A) Despite the overly strong authority of the captain, everything functions correctly owing to his natural leadership.
B) Each of the members chooses what job to do without telling the others and in the belief that everyone is aware of what he is doing.
C) The atmosphere is relaxed thanks to a captain who leaves complete freedom to the various members of the crew.
D) The captains excessive authority considerably reduces communications and consequently the synergy and cohesion of the crew.

Which behaviour does most likely promote a constructive solution of interpersonal conflicts?

A) Responding with counter-arguments
B) Active listening
C) Giving up the own point of view
D) Staying to the own point of view

The relevance of check procedures during flight becomes even more important when:

A) flying an unfamiliar type of aircraft and experiencing mental pressure.
B) flying an aircraft which you have flown recently.
C) flying an aircraft which you have flown many times before.
D) conducting a longer flight than you would normally perform.

The process of responding to a sender by confirming the reception of a message is called:

A) transference.
B) feedback.
C) redundancy.
D) synchronization.

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41. Which of the following statements best characterise a synergetic cockpit?

1. Decisions are taken by the captain, but prepared by the crew.
2. There is little delegating of tasks.
3. Communications are few in number but precise and geared purely to the flight.
4. Fluid, consensual boundaries exist in regard to leadership-style, which fluctuate between authority and laissez-faire

A) 2,4
B) 2,3
C) 1,4
D) 1,3,4

If a pilot has to perform two tasks requiring the allocation of cognitive resources:

A) the only way of not seeing performance tail off is to switch to rules-based mode for the two tasks.
B) the only way of not seeing performance tail off is to switch to knowledge-based mode for the two tasks.
C) a person reaches his limits as from simultaneous tasks, and performance will then tail off.
D) the sharing of resources causes performance on each task to be reduced.

The relationship which exists between crew error and flight safety:

A) is independent of the operational context, with the latter being identical for any flight operation.
B) as been evolving for 40 years and has now become independent of the social and technical system.
C) is dependent on the social and technical system and also on the operational context created by the system.
D) is a linear relationship which introduces crew training as the main factor.

Discussing private matters in the cockpit:

A) is appropriate in any phase of flight.
B) can improve team spirit.
C) should be avoided by all means in the cockpit.
D) decreases the captains role of leadership.

An non-synergetic cockpit:

A) always results from an over-relaxed atmosphere
B) is characterised by a highly efficient crew, communicating appropriately with the outside
C) is characterised by withdrawn crewmembers and unclear communication
D) is not very dangerous as each person checks everything personally

In a glass-cockpit aircraft, communication between the members of the crew:

A) will be hampered by the decrease in actions brought about by technical improvements,
B) does not loose its importance,
C) will increase as a result of the increase of technical dissemination of information,
D) are facilitated from the non-verbal point of view owing to the increased availability wich results from technical lightening of the workload,

List the primary function(s) of effective leadership:

A) Regulating information flow and decision making.
B) Regulating information flow, directing and co-ordinating crew activities, motivating crewmembers and decision making.
C) Setting priorities and making decisions.
D) Lead the crew at all times.

Which of the following statements are correct with regard to the design of a check list?

1. The longer a Check list, the more it must be subdivided into logical parts.
2. The trickiest points must be placed in the middle of the check list.
3. Check lists must be designed in such a way that they can be lumped together with other tasks.
4. Whenever possible, a panel scan sequence should be applied
5. Critical points should have redundancies.

The combination of correct statements is:

A) 1, 4 and 5 are correct.
B) 1, 2 and 3 are correct.
C) 1, 2 and 5 are correct
D) 1, 3 and 5 are correct

The planning and anticipation of future actions and situations makes it possible to:

1. Create a precise reference framework.
2. Avoid saturation of the cognitive system.
3. Automate planned actions.
4. Activate knowledge which is considered necessary for the period to come.

The correct statement(s) is (are):

A) 3 and 4 are correct.
B) 1, 2 and 4 are correct.
C) 2 and 4 are correct.
D) 1 and 2 are correct.

CRM (Crew Resource Management) training is:

A) not intended to change the individuals attitude at all
B) intended to develop effectiveness of crew performance by improving attitudes towards flight safety and human relationship management
C) is mainly of relevance to pilots with personality disorders or inappropriate attitudes
D) intended solely to alter an individuals personality

Which statement is correct? Crew decision making is generally most efficient, if all crew members concerned:

A) always ask the captain what to do.
B) are always task oriented.
C) are always relationship oriented.
D) adapt their management style to meet the situational demands.

Professional languages have certain characteristics, for example:

1. They use a limited vocabulary .
2. They are rich and adapted to the context, which sometimes lead to ambiguities.
3. Their grammar is rather complicated and complex.
4. Context provides meaning, therefore reduces the risk of ambiguities.

The correct statement(s) is (are):

A) 2 and 3 are correct.
B) 1 and 3 are correct.
C) 1 and 4 are correct.
D) only 4 is correct.

Action plans (SOPs) in a cockpit must:

A) only follow the manufacturers proposals and not reflect individual operators cockpit philosophies.
B) only be tailored to the type of aircraft, regardless of current MCC procedures.
C) be shared by the members of the crew and updates at each modification in order to maintain maximum synergy.
D) be tailored to the individual pilots needs in order to facilitate the normal operation of the aircraft.

In order to make communication effective, it is necessary to:

1. Avoid the synchronization of verbal and non-verbal channels.
2. Send information in line with the receivers decoding abilities.
3. Always concentrate on the informational aspects of the message only.
4. Avoid increasing the number of communication channels, in order to simplify communication.

The correct statement(s) is (are):

A) 3 and 4 are correct.
B) 1, 2 and 3 are correct.
C) only 2 is correct.
D) 2 and 4 are correct.

Which of the following statements concerning conflicts is correct?

A) Conflicts are negative in themselves and can only lead to a general detachment of involved parties.
B) Whatever the cause of the conflict, its resolution must necessarily involve an additional party if it is to be effective.
C) The emergence of a conflict always results from calling into question the general abilities of one of the involved parties.
D) Conflict management involves the participation of all involved parties in finding an acceptable collective solution.

Which of the following statements concerning check list is correct?

A) The most important items should be placed at the beginning of a check list since attention is usually focused here.

B) The most important items must be placed in the middle of check list so that they come to be examined once attention is focused but before concentration starts to wane.

C) All the items of a check list are equally important; their sequence is of no importance.

D) The most important items must be placed at the end of check list, allowing them to be kept near at hand so that they are quickly available for any supplementary check.

Pre-thought action plans may be said to:

1. Ease access to information which may be necessary.
2. Sensitize and prepare for a possible situation to come.
3. Be readily interchangeable and can therefore be reformulated at any time during the flight.
4. Define a framework and a probable strategy for the encountered situation.

The combination of correct statements is:

A) 2, 3 and 4 are correct.

B) 1, 2 and 4 are correct

C) 2 and 4 are correct.

D) 1, 2 and 3 are correct.

What distinguishes status from role?

A) While role defines the enjoyment of a hierarchical position and its recognition by the group, status defines - via behaviour- the functions that must be performed by individuals

B) While role defines- via behaviour- the functions that must be performed by individuals, status defines the enjoyment of a hierarchical position and its recognition by the group

C) Unlike status, role is fixed and is modified either by the situation in flight or by the interactions of a new crew

D) Unlike status, role is fixed and is not modified either by the situation in flight or by the interactions of a new crew

Mark the two most important attributes for a positive leadership style:

1. dominant behaviour
2. exemplary role-behaviour
3. mastery of communication skills
4. Laissez-faire behaviour

A) 4

B) 2 and 4

C) 1

D) 2 and 3

What is synergy in a crew?

A) The uncoordinated action of the crewmembers towards a common objective.
B) A behavioural expedient associated with the desynchronisation of the coordinated actions.
C) The coordinated action of unrelated individual performances in achieving a non-standard task.
D) The coordinated action of all members towards a common objective, in which collective performance is proving to be more than the sum of the individual performances.

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61. What are the most frequent results of an self-centred captain on the flight deck?

A) High group performance despite the strained relations.
B) In a two-pilot flight deck, the co-pilot is ignored and may react by disengaging, showing delayed responses or demonstrate the scapegoat effect.
C) Performance is very poor as self-centred behaviour leads to an increase of cooperation and efficiency.
D) A major risk of authority inversion if the co-pilot is unassertive.

The intended recipient of a message must:

1. Give priority and adapt to the senders situation.
2. Acknowledge the receipt only in case of doubt.
3. Be able to reject or postpone a communication attempt if - the pilot is too busy.
4. Stabilize or finish a challenging manoeuvre before starting a discussion.

The combination of correct statements is:

A) 1, 2 and 3 are correct.
B) 1 and 2 are correct.
C) 2 and 3 are correct.
D) 3 and 4 are correct.

During the cruising phase of a short-haul flight the captain starts to smoke a cigarette in the cockpit. The flying copilot asks him to stop smoking because he is a non-smoker. The captain tells him: This is your problem, and continues smoking. What should the copilot do?

A) He should report the chief pilot about this behaviour of the captain.
B) He should learn to accept the captain smoking cigarettes in the cockpit.
C) He should repeat his worries about smoking in the cockpit and should argue with the captain about this problem until the conflict is solved.
D) He should not further discuss this issue but should come back to this conflict during the debriefing.

What characterises a good leader?

A) Only his/her ability to dominate and be assertive.
B) The situation, the goals and composition of the group.
C) The authority gradient only.
D) His/her ability to prevent discussions among the crew members in order to avoid conflict.

Which of the following statements best characterise a self-centred cockpit?

A) Without taking note of what the other members are doing, each one does his own thing while at the same time assuming that everyone is aware of what is being done or what is going on.
B) While decreasing communication, the independence of each member bolsters the crew's synergy.
C) The egocentric personality of the captain often leads to a synergetic cockpit.
D) he communication between crew members always increases when the captain takes charge of a situation.

Informal roles within a crew:

A) do not impair the captains influence.
B) are explicitly set out by the crew.
C) evolve as a result of the interactions that take place among crew members.
D) characterize inefficient crews.

Safety is often improved by applying the principles of CRM, e.g.:

A) the avoidance of any conflict in order to preserve the crews synergy
B) unquestioned obedience to all the Captains decisions
C) abstention from any suggestion which might be untimely
D) expression of ones doubts or different opinion for as long as this doubt can not be rejected on the base of evidence

Define active listening.

A) Active listening is to listen and either agree or disagree.
B) Active listening involves a genuine desire to understand another persons perception and sensitivity to others thoughts and feelings.
C) A and C are correct.
D) Listening and expressing understanding of what another person has said.

What may be the origins of representation errors?

1. Perception errors.
2. The catering for all available information.
3. Incorrect information from the observed world.
4. The receipt of a bad piece of information.

A) 3, 4
B) 1, 2
C) 1, 3, 4
D) 2, 3

Very high ambition and need for achievement:

A) improves the coping process with personal failures.
B) disturb the climate of co-operation.
C) always promote teamwork.
D) fulfil the requirements of stress resistance.

Define power-distance and describe how it relates to leadership styles:

A) It refers to the human ability to ignore extraneous events and focus on the events of interest.

B) Power-distance refers to the nature of the relationship between leaders and subordinates. Subordinates in high power-distance cultures tend to accept and expect autocratic leadership and are generally unwilling to question the acts or decisions of leaders

C) Power-distance refers to how clear the communicated message must be to go the distance from the transmitting brain to the receiving brain.

D) Power-distance refers to the nature of the relationship between leaders and subordinates. Subordinates in high power-distance cultures tend to accept and expect submissive leadership and are generally unwilling to question the acts or decisions of leaders

The person with overall responsibility for the flight is the:

1. Pilot in Command
2. Co-pilot
3. Navigator
4. Air traffic controller

The correct statement(s) is (are):

A) 3

B) 4

C) 1

D) 2

Which of the following sentences concerning crew-performance is correct?

A) The quality of crew-performance depends on the social-competence of individual team members.

B) Mistakes can always be detected and corrected faster by the individual.

C) To be a member of a team can not increase one's own motivation to succeed in coping with task demands.

D) The quality of crew-performance is not dependent on social-competence of individual team members.

Improvement of human reliability should entail:

A) in aviation, the elimination of errors on the part of front-line operators.

B) an effort to understand the causes and find means of recovery for errors committed.

C) the elimination of latent errors before they can effect performance.

D) the analysis of modes of human failures.

During the preparation work in the cockpit the captain notices that his copilot on the one hand is rather inexperienced and insecure but on the other hand highly motivated. Which kind of leadership behaviour most likely is inappropriate?

A) The captain lets the copilot fly and gives him detailed instructions what to do.

B) The captain flies the first leg by himself and explains each action to the copilot in order to keep him informed about his decisions.

C) The captain lets the copilot fly and observes his behaviour without any comments.

D) The captain lets the copilot fly and engages him in discussion on key topics at safe times to do so

Coaction is a mode of coordination which recommends:

A) sustained cooperation on actions and the formulation of commitments concerning flight situations.
B) working parallel to achieve individual objectives.
C) the application of procedural knowledge in the conduct of specific actions.
D) working parallel to achieve one common objective.

An increase in workload usually leads to:

A) a longer and less frequent exchange of information.
B) a longer and more frequent exchange of information.
C) a shorter and less frequent exchange of information.
D) a shorter and more frequent exchange of information.

How do you understand the statement (one cannot communicate)?

A) The statement above is a misprint.
B) Being silent as well as inactive are nonverbal behaviour patterns which express a meaning.
C) Each situation requires communication.
D) You cannot influence your own communication.

What strategy should be put in place when faced with an anticipated period of time pressure?

A) A non-sequential strategy.
B) A strategy of preparing decisions.
C) A Laissez-faire strategy.
D) A strategy of no commitment.

Which of the following errors occur at rules-based level?

1. Omission.
2. The application of a poor rule.
3. Attention capture.
4. The poor application of a good rule.

A) 2, 4
B) 1, 3
C) 1, 2
D) 3, 4

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81. What are the advantages of coordination?

A) Redundancy, exploration, risky shift.
B) Interaction, cognition, redundancy.
C) Cooperation, cognition, redundancy.
D) Redundancy, synergy, clarification of responsibility.

1. Lively information is easier to take into consideration for creating.
2. The sequence in which information is offered is also important for the use the pilot makes of it.

A) 1 and 2 are both correct.
B) 1 and 2 are both not correct.
C) 1 is not correct, 2 is correct.
D) 1 is correct, 2 is not correct.

Which of the following statements regarding interpersonal interactions are correct?

1. If the sender finds the receiver competent, he/she tends to reduce verbal redundancy content of his sentences.
2. If the interlocutor is of non-native tongue, the sender will reinforce what he is saying by using more complicated words so as to optimize understanding.
3. If he/she finds him incompetent, he tends to simplify the content of sentences.
4. Simplification of check list in a crew who know each other essentially takes place in the case of interpersonal conflict.

The correct statement(s) is (are):

A) 1 and 3 are correct.
B) 1 and 2 are correct.
C) 2 and 3 are correct.
D) 3 and 4 are correct.

What characterises the notion of role?

A) The hierarchical position of the function and the associated behaviour.
B) Only the functions associated with role.
C) The function and behaviour associated with the particular role.
D) The characteristic behaviour associated with the description of the various roles of a particular status.

Nonverbal communication:

A) is of no meaning in the cockpit.
B) is always used intentionally.
C) should be avoided by all means in the cockpit.
D) supports verbal communication.

Liveware - Liveware interaction is:

A) Involving considerations such as designing seats to fit the sitting characteristics of the human body.
B) The interaction between humans and the non-physical aspects of the system such as procedures.
C) The interface between humans and the environment.
D) The interface between people.

An efficient flight deck (synergetic cockpit) will be observed when:

A) the plan of action is defined by the Captain because of his experience level.
B) the Captain delegates the decision making process to other crew members.
C) decisions do not need to be discussed because of a common synergy between the crew members.
D) decisions are taken by the Captain with the help and participation of the other crew members.

What are the most common situational awareness problem(s)?

A) All of the above.
B) Failure to monitor flight path.
C) Misunderstandings caused by confusing instructions, phraseology and mindsets.
D) Distractions caused by malfunctions, radio, checklists, procedures and situations not directly related to flying the aircraft.

Define situational awareness:

A) The perception of the elements in the environment within a volume of space.
B) The right to have and express your own feelings and ideas.
C) The perception of the elements in the environment within a volume of space and time, the comprehension of their meaning and the projection of their status in the near future.
D) The ability to rank tasks according to importance and to solve problems.

Define effective communication:

A) Effective communication occurs when one person talks to another person.
B) Effective communication is a transmission of a message from one brain to another with a minimum of change.
C) Effective communication is a transmission of a message from one brain to another.
D) Effective communication occurs when one person talks to another person who is listening.

With regard to the practice of English, which of the following statements is correct?

A) Be familiar with normal procedures in English since only this allows for effective management of any flight's communication.
B) It is necessary and sufficient to have a command of any of the official languages of the ICAO.
C) The composition of every crew should be geared to a command of the official aeronautical language of the destination country
D) All pilots should master it because the aeronautical world needs one common language.

Which of the following responses lists most of the common hazardous thought patterns (attitudes) for pilots to develop?

A) Machismo complex, resignation, confidence, self criticism.
B) Invulnerability, under confidence, avoidance of making decisions, lack of situational awareness.
C) Resignation, confidence, inattention.
D) Anti-authority, impulsiveness, invulnerability, resignation, machismo complex.

Using a checklist prior start is a contribution to:

A) safety, because the concentration on the check list items will, draw the pilots attention to flight related tasks, reducing distraction from personal stress.
B) frustration.
C) stress, because time pressure prior take-off is always present.
D) workload, because using checklists will increase the pilot's workload prior take-off.

To maintain good situational awareness you should:

1. believe only in your own interpretation of the data
2. gather as much data as possible from every possible source before making inferences
3. question whether your hypothesis still fits the situation as events progress and try to make time to review the situation
4. consider ways of testing your situational hypothesis to see whether it is correct

A) 2, 3 and 4 are correct.
B) 1 and 3 are correct.
C) all answers are correct.
D) 1 and 4 are correct.

Which combination of elements guarantee the understanding of a message without adding new information to it?

A) Encoding.
B) Synchronization.
C) Feedback.
D) Coding.

Doing a general briefing in the pre-flight phase the captain should emphasize:

A) to avoid inadequate handling of flight controls.
B) to depart on schedule.
C) particular requirements in the field of crew coordination due to specific circumstances.
D) complete delegation of all duties.

Personality:

It will not happen to me, can be used as an example to illustrate which attitude?

A) Anti-authority.
B) Resignation.
C) Macho.
D) Invulnerability.

An ideal professional pilot is in his behaviour:

A) both person and goal oriented.
B) rather person than goal oriented
C) neither person nor goal oriented
D) rather goal than person oriented

If you approach an airfield VFR at a prescribed altitude, exactly following the approach procedure, and you encounter no unexpected or new problems you show:

A) rule and skill based behaviour
B) knowledge based behaviour
C) rule based behaviour
D) skill based behaviour

The effectiveness of the individual depends on:

A) the ability to go beyond ones own capabilities.
B) the ability to repress the dictates of needs.
C) the ability to balance the dictates of the individuals needs and the demands of reality.
D) the total independence with respect to the environment.

A persons most fundamental pressing need is to preserve, maintain and enhance the organised self. This is called:

A) A persons goals and values.
B) A persons mind set.
C) The self concept.
D) A persons basic need.

Attitudes are defined as:

A) tendencies to respond to people, institutions or events either positively or negatively
B) the genetic predispositions for thinking and acting
C) a synonym for behaviour
D) the conditions necessary for carrying out an activity

Psychologists divide behavioural styles into which two basic categories?

A) None of above are correct.
B) Body language style and verbal style.
C) Relationship oriented and task oriented.
D) Aggressive and submissive.

Which of the following personal attitudes would be classified as Macho?

A) People who are always trying to prove that they are better than anyone else.
B) This is the attitude of people who frequently feel the need to do something, anything, immediately.
C) People who think what is the use? do not see themselves as making a great deal of difference in what happens to them.
D) A person who is submissive.

Contrary to a persons personality, attitudes:

A) are the product of personal disposition and past experience with reference to an object or a situation.
B) are essentially driving forces behind changes in personality.
C) form part of personality and that, as a result, they cannot be changed in an adult.
D) are non-evaluative adaptation procedures regardless of the result of the actions associated with them.

A high level of motivation is related:

A) to monotony states.
B) to high levels of arousal.
C) to complacency.
D) to high levels of intelligence.

A pilot can be described as being proficient, when he/she:

A) is capable of maintaining a high level of arousal during a great bulk of the flight
B) has automated a large part of the necessary flight deck routine operations in order to free his/her cognitive resources
C) knows how to invest the maximum resources in the automation of tasks in real time
D) is able to reduce his/her arousal to a low level during the entire flight

Human behaviour is determined by:

A) cultural influences
B) biological characteristics, social environment and cultural influences
C) the social environment
D) biological characteristics

Incapacitation is most dangerous when it is:

A) sudden.
B) obvious.
C) intense.
D) insidious.

Define culture:

A) Religious and national differences.
B) National differences.
C) Company, national or religious differences.
D) The values, beliefs and behaviour that we share with others that help define us as a group, especially in relation to other groups.

Which of the following statements summarises the impact that motivation may have on attention?

A) Motivation has only a small effect on attention, but it facilitates alertness.
B) It stimulates attention but may lead to phases of low arousal.
C) It only facilitates attention in extreme cases (risk of death).
D) It increases the mobilisation of energy and thus facilitates the quality of alertness and attention.

Which of the following statements in regard to motivation is correct?

A) Low motivation will guarantee adequate attention management capabilities.
B) Motivation will reduce the task automation process.
C) Extremely high, motivation in combination with excessive stress will limit attention management capabilities.
D) Too much motivation may result in hypovigilance and thus in a decrease in attention.

A copilot has passed an upgrading course to become a captain. Which psychological consequence is most likely?

A) His/her self-concept is going to change because of new roles and tasks which have to be incorporated.
B) An upgrading does not have any of the mentioned psychological consequences.
C) The increased command authority leads to a higher professionalism.
D) His/her self -concept is going to be stabilized because of the higher status as a captain.

The needs of an individual lead to:

A) a change in the individuals motivation and consequently to an adaptation of the behaviour.
B) prolonged suppression of all basic needs in favour of high self-actualization.
C) no change in his motivation and consequently to the persistence of the individuals behaviour in regard to the desired outcome.
D) preservation from dangers only if social needs are being satisfied.

Select the correct statement about assertive behaviour:

A) Assertive behaviour helps you get what you want and need.
B) Assertive behaviour denies the rights of others.
C) Assertive behaviour uses action instead of words.
D) Assertive behaviour is often weak, hesitant and soft.

Being a copilot implies:

A) Inquiry
B) All of the above mentioned alternatives
C) Assertiveness
D) Advocacy

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21. Situations particularly vulnerable to reversion to an earlier behaviour pattern are:

1. when concentration on a particular task is relaxed
2. when situations are characterised by medium workload
3. when situations are characterised by stress

A) 1. and 3.
B) 1. and 2.
C) 3.
D) 2. and 3.

According to Maslow, which of the following human needs is most profound (the lowest level in the pyramid)?

A) Esthetical needs.
B) Physical needs.
C) The need for self realisation.
D) The need for safety and security.

Describe task oriented behaviour:

A) A person who is high task oriented and low relationship oriented is considered to have an aggressive style of behaviour.
B) The first consideration is to solve the tasks and duties of others.
C) The first consideration is given to the task or goal in the decision making process.
D) Both A and B are correct.

Which of the following elements make up the personality of an individual?

1. Heredity.
2. Childhood environment.
3. Upbringing.
4. Past experience.

A) 2, 3, 4
B) 1, 2, 4
C) 2, 3
D) 1, 2, 3, 4

Define relationship oriented behaviour:

A) The first consideration is the feelings of others.
B) The first consideration is to meet personal needs.
C) Low relationship oriented traits combined with low task oriented traits.
D) First considerations are given to tasks related to the final goal.

The most dangerous characteristic of the false mental model is, that it:

A) will only occur under conditions of stress
B) can easily be changed
C) will mainly occur under conditions of relaxation
D) is frequently extremely resistant to correction

Which of the following personality characteristics makes crew decision making most effective?

A) Competitiveness.
B) Assertiveness.
C) General intelligence.
D) Friendliness.

What is the self-concept?

A) All of us have a mental blueprint or picture of ourselves. This blueprint is composed of ideas, attitudes, values and commitments, which are influenced by our past experiences, our successes and failures, our triumphs and our humiliations.
B) A self defence mechanism to preserve or protect our self-system.
C) Both B and C are correct.
D) It is part of our personality formed in part by way others reacted to us especially during our formative years.

Which statement is correct?

A) High performers tend to be people who enjoy their work situation; to perform well one must be motivated by feeling trusted and involved.
B) A vigilant task is one that does not require consistent monitoring without lapses in attention.
C) Culture refers to national difference only.
D) Fatigue is a short-term problem, because enough sleep will always cure it.

Human overload and underload:

Workload essentially depends on:

A) the task and the days parameters (weather report, aircraft load, type of flight, etc)
B) the pilots knowledge
C) the pilots experience and the ergonomics of the system
D) the current situation, the pilots expertise and the ergonomics of the system

What are easily observable indications of stress?

A) Perspiration, flushed skin, dilated pupils, fast breathing.
B) Rising of the blood pressure, pupils narrowing, stabbing pain around the heart.
C) Faster, deep inhalation, stabbing pain around the heart.
D) Lowering of the blood pressure.

Which of the following statements concerning tiredness is correct?

A) Tiredness is an objective psycho physiological symptom of a reduction in attention capabilities.
B) Tiredness is a subjective sensation which is reflected in hypovigilance or in poor management of intellectual capabilities.
C) Tiredness is always the result of an intellectual overload.
D) Tiredness is the consequence of a diminution of performance.

The amount of sleep that will give maximum sleep credits without "wasted time" is:

A) 14 hours.
B) 10 hours.
C) 8 hours.
D) 12 hours.

In order to completely resynchronise with local time after zone crossing, circadian rhythms require:

A) about one week per 2.5 hours of time shift
B) about one day per 2.5 hours of time shift.
C) less time when flying from east to west.
D) more time when flying from east to west.

Which of the following statements about psychosomatic stress is or are correct?

1. Psychosomatic stress should hardly affect aviation because of good crew selection procedures.
2. Psychosomatic stress causes physiological symptoms to have psychological effects.

A) Both.
B) Neither.
C) 2
D) 1

Stress management programmes usually involve:
A) the use of psychoactive drugs
B) only the removal of stress
C) the prevention and/or the removal of stress
D) only the prevention of stress

The duration of a period of sleep is governed primarily by:
A) the point within your circadian rhythm at which you try to sleep.
B) the duration of your previous sleep.
C) the number of points you have in your credit/deficit system.
D) the amount of time you have been awake.

What are the three phases of General Adaptation Syndrome?
A) Alarm, resistance, exhaustion.
B) Alert, resistance, performance.
C) Alert, resistance, exhaustion.
D) Alarm, resistance, performance.

The behavioural effects of stress may include:
1. manifestation of aggressiveness.
2. a willingness to improve communication..
3. a willingness for group cohesion.
4. a tendency to withdrawal.
5. inappropriate gestural agitation.

The combination of correct statements is:
A) 1, 4 and 5 are correct.
B) 2, 4 and 5 are correct.
C) 1 and 4 are correct.
D) 1, 2 and 3 are correct

The individuals perception of stress depends on:
A) the subjective evaluation of the situation and ones abilities to cope with it.
B) the objective evaluation of the situation and ones abilities to cope with it.
C) the conditions of the current situation only.
D) the pilots increasing level of arousal.

About ... of a normal sleep is spent in Stage 2 sleep.
A) 75 percent
B) 30 percent
C) 25 percent
D) 50 percent

What is the most decisive factor in regard to a very demanding stress situation?
A) The subjective evaluation of the situation by the individual.
B) The unexpected outcome of the situation.
C) The time available to cope with the situation.
D) The objective threat of the situation.

The physiological rhythms of a pilot in a new time zone will resynchronise to this new time zone at a rate of about:

A) 4 - 4.5 hours a day.
B) 2 - 2.5 hours a day.
C) 3 - 3.5 hours a day.
D) 1 - 1.5 hours a day.

The maintenance of mans internal equilibrium is called?

A) Homeostasis.
B) Poikilothermy.
C) Heterostasis.
D) Homeothermy.

A person being exposed to extreme or prolonged stress factors can perceive:

A) coping stress.
B) eustress.
C) stressors.
D) distress (stress reactions).

General Adaptation Syndrome is characterised by the following phases:

1. alarm
2. alert phase
3. resistance phase
4. exhaustion phase
5. vigilance phase

A) 1, 3, 4
B) 2, 3, 4, 5
C) 1, 2, 4, 5
D) 2, 3, 4

Sleeplessness or the disruption of sleeping patterns:

1. can lead to symptoms of drowsiness, irritability and lack of concentration
2. will make an individual more prone to make errors

A) 1 is not correct, 2 is correct
B) 1 and 2 are both not correct
C) 1 is correct, 2 is not correct
D) 1 and 2 are both correct

Which of the following are characteristics of paradoxical sleep?

1. It refreshes the body and muscle.
2. It decreases during the night.
3. Rapid eye movements.
4. Brain activity is similar to that being awake.

A) 1, 2, 3, 4.
B) 3 and 4.
C) 1, 2 and 3.
D) 1 and 3.

The physiology of stress is now well known:

A) stress promotes an increase in physical strength rather than promoting mental performance
B) the only stress hormone is adrenaline
C) stress develops in 2 stages: sublimation of performance and then acceleration of heart rate and increase in vision
D) stress slows down the production of sugar by the organism and thereby slows down the heart rate

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21. A fatigued pilot:

A) will get pericardial pain.
B) will show signs of increased irritability.
C) considerably increases the ability to concentrate.
D) is acting similar as when encountering a state of depression.

Acute stress quickly leads to:

A) the mobilization of resources required to cope with the stressor.
B) a decrease in the amount of resources mobilized to face the situation.
C) a state of over activation beyond the control of willpower.
D) a permanent state of incapacitation.

What is the effect of stress on performance?

1. It always reduces performance.
2. Optimum performance is obtained with optimum arousal.
3. Excessive stress weakens performance.
4. Insufficient stress weakens performance.

The combination of correct statements is:

A) 2, 3, 4
B) 1, 2, 4
C) 1, 3, 4
D) 1, 2, 3

Concentration is essential for pilots:

A) All intellectual processes, including very routine ones, make demands on resources and therefore on ones concentration.
B) It only takes a little willpower to increase ones capacity of concentration without limits.
C) Vigilance is all that is required to be attentive.
D) However, capacity of concentration is limited.

Please check the following statements:

1. A stressor causes activation
2. Activation stimulates a person to cope with it

A) 1 and 2 are both not correct
B) 1 is correct, 2 is not correct
C) 1 is not correct, 2 is correct
D) 1 and 2 are both correct

What does stress management involve?

A) Recognising stress, accepting it and developing a coping strategy.
B) The recognition and removal of stress.
C) A complete rejection of stress.
D) A constant stress prevention.

Stress is a response which is prompted by the occurrence of various stressors. Of these, which can be called physiological?

A) Temperature, hunger, thirst, divorce
B) Noise, hunger, conflicts, a death
C) Noise, temperature (low or high), humidity, sleep deprivation
D) Heat, humidity, fatigue, administrative problems

We can observe the following in relation to a state of hypothermia:

A) substantial increase in internal body temperature whereas peripheral temperature at the skin is stable.
B) a rapid fall in ambient temperature.
C) greater capacity for adaptation than in a hot atmosphere.
D) reasoning problems as soon as body temperature falls below 37° C.

When is your body temperature at its lowest?

A) In the afternoon
B) Early in the morning
C) Late in the evening
D) Around 9 a.m.

Following a flight that crosses numerous time zones, the associated shifting of Zeitgebers helps body clock re- synchronisation to the new local time at the rate of:

A) 3 hours per day.
B) 0.5 hour per day.
C) 1.5 hours per day.
D) 2.5 hours per day.

Learning to fly naturally induces stress in a student pilot because he is lacking experience.
Manifestations of this type of stress are:

1. nervousness and channelized attention
2. being rough at the controls
3. smoke and drink much more alcohol than usual
4. airsickness, lack of sleep

A) 1, 2 and 3 are correct, 4 is false.
B) 1 and 2 are false, 3 and 4 are correct.
C) 1, 2 and 4 are correct, 3 is false.
D) 1 and 2 are correct, 3 and 4 are false

One of the effects of the Rebound Effect is to:

A) top up orthodox sleep first.
B) top up stage 2 sleep first
C) top up slow wave sleep first
D) top up REM sleep first.

Stress may be defined as:

A) a poorly controlled emotion which leads to a reduction in capabilities.
B) a human reaction which one must manage to eliminate.
C) a psychological phenomenon which only affects fragile personalities.
D) a normal phenomenon which enables an individual to adapt to encountered situations.

Human errors are frequent and may take several forms:

A) an error can be described as the mismatch between the pilots intention and the result of his/her actions
B) an violation is an error which is always involuntary
C) an error of intention is an error of routine
D) representational errors in which the pilot has properly identified the situation and is familiar with the procedure

Concerning circadian rhythm disruption (jet lag), the effects of adjustment to destination time:

1. are longer for western rather than eastern flights
2. are longer for eastern rather than western flights
3. vary little between individuals
4. may vary greatly between individuals

A) 1,4
B) 1,3
C) 2,4
D) 2,3

In order to overcome an overload of work during the flight, it is necessary to:

1. Know how to use ones own reserve of resources in order to ease the burden on the crew.
2. Divide up tasks among the crew.
3. Abandon automatic mode and instead process as much information as possible consciously.
4. Drop certain tasks and stick to high-level priorities. The correct statement(s) is (are):

A) 1, 2 and 4 are correct
B) 3 and 4 are correct
C) 1 and 3 are correct
D) 1, 2 and 3 are correct

Which of the following is correct regarding the five stages in the sleep patterns?

A) About 50% of sleep is stage 2
B) Stage four is only reached after approximately four hours
C) Paradoxical sleep is similar to stage 1 sleep
D) REM sleep starts early in the sleep pattern and slowly changes to stage three or four

In relation to the word stress as it affects human beings, which of the following responses is correct?

A) Stress is a term used to describe how a person reacts to demands placed upon him/her.
B) All forms of stress should be avoided.
C) Self imposed obligations will not create stress.
D) Reactive stressors relate purely to a pilots physical condition.

Experiencing stress depends on:

A) the fragility of individuals to certain types of stimulation.
B) the individual interpretation of the situation.
C) the individuals state of tiredness.
D) the environment of the situation which the individual will live through or is in the process of living trough.

If coping with a stress situation is impossible, one will remain in the state of:

A) adaptation.
B) distress.
C) eustress.
D) hypoxia.

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41. Which of the following physical stimuli may cause stress reactions?

1. noise.
2. interpersonnal conflict.
3. temperature.
4. administrative problem.
5. hunger.

The combination of correct statements is:

A) 1,3,4
B) 1,3,5
C) 3,4,5
D) 2,3,5

The discipline of the study of body rhythms is:

A) Chronobiology.
B) Chrono-science.
C) Circadism.
D) Chrono-physics.

Which one of the following statements is correct regarding REM sleep?

A) REM sleep consists of four stages.
B) REM sleep creates a high degree of muscular activity in your body.
C) REM sleep re-vitalises your brain after strenuous mental activity.
D) REM sleep primarily re-vitalises your body, not your brain.

Please check the following statements:

1. Psychosomatic means that mental and/or emotional stressors can be manifested in organic stress reactions.
2. Psychosomatic means that a physical problem is always followed by psychological stress.

A) 1 is false 2 is correct.
B) 1 is correct, 2 is false.
C) 1 and 2 are correct.
D) 1 and 2 are false.

Stress is above all:

A) a phenomenon which is specific to modern man
B) a response by man to his problems, which automatically leads to a reduction in his performance
C) a psychosomatic disease that one can learn to control
D) the best adaptation phenomenon that man possesses for responding to the various situation which he may have to face

Consider the following two statements:

1. Psychosomatic means that a physiological problem is followed by psychological stress.
2. Psychosomatic complaints hardly occur in professional aviation because of the strict selection for this particular profession.

A) 1 and 2 are both not correct
B) 1 and 2 are both correct
C) 1 is not correct 2 is correct
D) 1 is correct 2 is not correct

1. REM-sleep becomes shorter with any repeated sleep cycle during the night.
2. REM-sleep is more important for the regeneration of mental and physical functions than all the other sleep stages are.

A) 1 is correct 2 is not correct.
B) 1 and 2 are false.
C) 1 is not correct 2 is correct.
D) 1 and 2 are both correct.

Concerning the relation between performance and stress, which of the following statement(s) is (are) correct?

A) A student will learn faster and better under severe stress
B) A moderate level of stress may improve performance
C) Domestic stress will not affect the pilots performance because he is able to leave this type of stress on the ground
D) A well trained pilot is able to eliminate any kind of stress completely when he is scheduled to fly

With reference to the sleep/wake cycle of credit and debit system, 6 hours sleep will put the body in credit by:

A) 12 hours.
B) 8 hours.
C) 6 hours.
D) 24 hours.

The resistance phase of stress reaction is characterized by:

1. activation of the autonomic nervous system (ANS).
2. testosterone secretion which enables fats to be converted into sugar.
3. a sudden fall in stress resistance.
4. the appearance of psychosomatic disorders when lasting over a prolonged time.

The combination of correct statements is:

A) 1,2 and 3 are correct
B) 3 and 4 are correct
C) 1 and 4 are correct
D) 2 , 3 and 4 are correct

On the inverted U-curve, also called the Yerkes-Dodson curve, being on the extreme left side indicates:

A) Sleep
B) Anxiety
C) Fitness
D) Anger or despair

Check the following statements:

1. A person experiencing sleep loss is unlikely to be aware of personal performance degradation.
2. Performance loss may be present up to 20 minutes after awaking from a short sleep (nap).

A) 1 and 2 are both correct.
B) 2 is correct.
C) 1 and 2 are both not correct.
D) 1 is correct.

The recovery rate for circadian disrhythmia is:

A) Approximately 60 minutes for each day in the new time zone.
B) Approximately 80 minutes for each day in the new time zone.
C) Approximately 90 minutes for each day in the new time zone.
D) Approximately 30 minutes for each day in the new time zone.

Stress is a reaction to adapt a specific situation. This reaction:

A) can only be controlled by medical treatment.
B) is always linked to excessive fear.
C) is purely physiological and automatic.
D) may include various psychological and physiological elements which one can learn to manage.

Stress appears:

1. Only in a situation of imminent danger.
2. Only when faced with real, existing and palpable phenomenon.
3. Sometimes via imagination, the anticipation of a situation or its outcome.
4. Because of the similarity with a formerly experienced stressful situation.

The correct statement(s) is (axe):

A) 1, 2, 4
B) 3, 4
C) 2, 3
D) 1, 2

Which of the following statements is true?

A) People are capable of living without stress
B) Stressors are independent from each other
C) Stressors accumulate thus increasing the likelihood to exhaustion
D) Stress should always be avoided under any circumstances

What triggers stress in humans?

A) Objective stimulation from the environment regards of subjective perceptions.
B) The subjective interpretation an individual gives to a situation experienced.
C) Only strong excitations of the sensory organs: a flash of light, noise, the smell of smoke.
D) Always the awareness of an emotion and a physiological activation (e.g. rapid heart rate).

Narcolepsy is:

A) an inability to stop falling asleep when in sleep credit.
B) sleepwalking.
C) an inability to stop falling asleep when in sleep debit.
D) a cessation of breathing whilst asleep.

For what reason is it important to be familiar with the circadian rhythm of body temperature?

A) Sleep usually occurs at times of rising or high body temperature
B) Falling asleep is easiest when body temperature is stable
C) Peak performance occurs at the time of rising or high body temperature
D) Peak performance occurs when body temperature remains constant

Which, if any, of the following is/are true?

1. Psychosomatic refers to the interrelationships of mind and body.
2. Psychosomatic refers to a psychological reaction to an outside stimulus causing physiological change/changes.
3. Psychosomatic problems are not common among the pilot community due to the high standard of selection.
4. Psychosomatic problems are just to do with the body and not the mind.

A) None are correct
B) 1 and 2
C) 3 and 4
D) 1 and 3

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61. Cognitive evaluation which leads to stress is based on:

A) the evaluation of the situation and the state of fatigue of the individual.
B) the evaluation of the capabilities of the individual and the time available.
C) the evaluation of the situation and the evaluation of capabilities to cope with it.
D) the capabilities of the individual and the solutions provided by the environment.

How should a pilot react, when suffering from chronic stress?

A) Attempt to reduce the stress by using a concept which approaches the entire body and improves wellness.
B) Ignore the particular stressors and increase your physical exercises.
C) Use moderate administration of tranquillizers before flight.
D) Always consult a psychotherapist before the next flight.

The readjustment of the biological rhythms after a time shift is normally more difficult:

A) with flights towards the East.
B) with flights towards the West.
C) with flights towards the South.
D) with flights towards the North.

Regarding arousal, which of the following statements is wrong?

A) A very low level of arousal can be dangerous, since you will be less alert during flight
B) A medium level of arousal can be dangerous, since you have little spare mental capacity in this situation
C) A very high level of arousal will always lead to too quick and timely decisions, since you are very alert
D) A low level of arousal is often accompanied by low body temperature

Stress is a frequent aspect of the pilots job. Under which of the following circumstances does it occur?

1. Stress occurs whenever the pilot must revise his plan of action and does not immediately have a solution.
2. Stress occurs with inexperienced pilots when the situational demands exceed their individual capabilities.
3. Stress occurs if a pilot is convinced that he will not be able to find a solution for the problem he just is confronted with

A) 1 is correct, 2 and 3 are false
B) Only 1 is false
C) 1, 2 and 3 are correct
D) 1 and 2 are correct, 3 is false

In order to minimize the effects of crossing more than 3-4 time zones with a layover more than 24 hrs, it is advisable to:

1. Adapt as quickly as possible to the rhythm of the arrival country
2. Keep in swing with the rhythm of the departure country for as long as possible
3. Maintain regular living patterns (waking ,sleeping alternation and regular meal pattern)
4. Try to sleep as much as possible to overcome negative arousal effects

A) 1, 2, 3, 4.
B) 1, 2.
C) 2, 4.
D) 1, 3.

What is the effect of tiredness on attention?

A) It increases the ability to manage multiple matters
B) It leads to ones attention being dispersed between different centres of interest
C) It has no specific effects on attention
D) It reduces the ability to manage multiple matters

During paradoxical sleep:

A) rapid eye movements can be observed.
B) the tone of the muscles is similar to that in the waking state.
C) the rhythm of the heart is very regular.
D) respiration is very regular.

In case of in-flight stress, one should:

A) always carry out a breathing exercise.
B) demonstrate aggressiveness to stimulate the crew.
C) only trust in oneself; being sure to know the own limits.
D) use all available resources of the crew.

The sleep cycles repeat during the course of a nights sleep.

1. Each succeeding cycle contains a greater amount of REM- sleep.
2. Frequent interruption of the REM-sleep can harm a human being in the long run.

A) 1 is not correct 2 is correct
B) 1 and 2 are both not correct
C) 1 is correct 2 is not correct
D) 1 and 2 are both correct

An identical situation can be experienced by one pilot as exciting in a positive sense and by another pilot as threatening. In both cases:

A) both pilots will loose their motor-coordination
B) the pilot feeling threatened, will be much more relaxed, than the pilot looking forward to what may happen
C) both pilots will experience the same amount of stress
D) the arousal level of both pilots will be raised

The cognitive effects of stress may include:

1. excessive haste.
2. an improvement in memory.
3. a complete block: action is impossible.
4. a risk of focusing on a particular aspect.
5. ease .of decision-making.
6. an increase in the rate of mistakes.

The combination which brings together all correct statements is:

A) 1, 3, 4, 6
B) 2, 3, 5, 6
C) 1, 2, 5
D) 3, 4, 5

According to the different phases of the General Adaptation Syndrom check the following statements:

1. During the alarm phase stress hormones (i.e. adrenalin) will cause a masaiv release of glucose into the blood, an acceleration of pulse and blood pressure as well as an increase in the rate and depth of breathing.
2. During the resistance phase the parasympathetic system uses a different type of hormone (cortisol) assisting to convert fat into sugar thus providing sufficient energy supply to the brain and body cells for sustained operation.
3. During the exhaustion phase the body has to be given time to eliminate the waste products which have been generated excessively during the two proceeding phases.

A) 1, 2 and 3 are correct.
B) 1 and 2 are correct, 3 is false.
C) Only 1 is correct.
D) 2 and 3 are correct, 1 is false.

A stress reaction is:

A) the non-specific stimuli causing a human body to respond
B) the specific response of the body to every demand placed on a person
C) the specific stimuli causing a human body to respond
D) the non-specific response of the body to every demand placed on a person

The effects of sleep deprivation on performance:

1. increase with altitude
2. decrease with altitude
3. increase with higher workload
4. decrease with higher workload

A) 1,2 and 3 are correct.
B) 1, 3 and 4 are correct.
C) 1 and 3 are correct.
D) 2, 3 and 4 are correct.

An overstressed pilot may show the following symptoms:

1. mental blocks, confusion and channelized attention.
2. resignation, frustration, rage.
3. deterioration in motor coordination.
4. high pitch voice and fast speaking

A) 1 and 2 are correct, 3 and 4 are false
B) 1, 2, 3 and 4 are correct
C) 1, 2 and 3 are correct, 4 is false
D) 1and 3 are correct, 2 and 4 are false

Hypovigilance is akin to:

A) deep sleep.
B) short nap.
C) extreme alertness.
D) micro sleep.

Which of the following routes will cause the worst Jet lag?

A) Flight from Oslo to Tokyo
B) Flight from Lisbon to Tallinn
C) Flight from Copenhagen to Cape Town
D) Flight from London to Los Angeles

What seem to be the main roles of deep sleep?

A) Its main role is associated with activities of memory activities and restoration of attention capabilities
B) Via physical recovery, it is characterised by an alternation of dream phases and paradoxical phases
C) It is confined to physical recuperation associated with fatigue
D) It essentially allows for physical recovery and the reconstitution of neuron energy reserves

The biological reaction to stress is identical regardless of the cause of stress. This mechanism occurs in three phases and is referred to, by Selye, as the General Adaptation Syndrome. The sequence is:

A) exhaustion phase - resistance phase- adaptation phase.
B) resistance phase - exhaustion phase - recovery phase.
C) alarm phase - denial phase - exhaustion phase.
D) alarm phase - resistance phase - exhaustion phase.

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81. The organism is mobilized by a process known as:

A) NAS - Natural Adaptation Syndrome.
B) GMS - General Mobilization Syndrome.
C) GAF - General Adaptation Function.
D) GAS - General Adaptation Syndrome

The relationship between arousal and flying performance is:

A) approximately the form of an inverted U.
B) approximately sinusoidal.
C) approximately linear increasing.
D) approximately exponential.

Define arousal:

A) All of the above is correct.
B) Arousal can be defined as an individuals preparedness for a difficult task.
C) A high arousal level usually indicates either a high level of activity or preparedness for a high level of activity.
D) A high level of arousal is usually accompanied by a high level of vigilance and is generally the opposite of drowsiness or day-dreaming.

Which of the following statements concerning stress is correct?

A) Stress is evaluated as a positive mechanism only in connection with precise tasks of the kind encountered in aeronautics.
B) Stress will be evaluated differently depending on whether it improves or reduces performance.
C) Stress always creates a state of high tension which decreases cognitive and behavioural performance.
D) Stress is a necessary way of demonstrating ones own work.

Circadian cycles cause body temperature to change. At approximately what time of day is our temperature at its lowest value?

A) 0200
B) 800
C) 1400
D) 0500

What are the characteristics of the alarm phase of the stress reactions?

1. increased arousal level as a result of adrenaline secretion.
2. an increase in heart rate, respiration and release of glucose.
3. a decrease in stress resistance.
4. activation of the digestive system.
5. secretion of cortisol to mobilize attention.

The combination of correct statements is:

A) 1, 2, 3.
B) 1, 2, 3, 4, 5.
C) 4, 5.
D) 1, 4.

The level at which a pilot will experience a situation as stressful:

A) depends on the level of demand but not on individual interpretation of the situational demands.
B) depends on the individuals perception of available abilities in comparison to the situational demands.
C) does hot depend on his capacity to absorb information.
D) depends on self-confidence alone.

Which of the following statements is correct?

1. Psychosomatic refers to a psychological reaction to an outside stimulus causing a physiological change or changes.
2. Psychosomatic refers to the interrelationships of mind and body.
3. Psychosomatic problems can be cured by counselling.
4. Psychosomatic problems are not commonly encountered in pilots because of the high selection standards.

A) 3
B) 1 and 2
C) 3 and 4
D) 1

Flying from Frankfurt to Moscow you will have a lay-over of 4 days. What time measure is relevant for your circadian rhythm on the 3. day?

A) UTC (universal time coordinated).
B) LT (local time).
C) ZT (zone time).
D) MEZ (middle European time).

What is a stressor?

A) An external or internal stimulus which is interpreted by an individual as beeing stressful
B) A psychological problem developed in a situation of danger.
C) All external stimulation are stressors since they modify the internal equilibrium.
D) The adaptation response of the individual to his environment.

The effect of experience and habit on performance:

A) is always negative
B) is never negative
C) is always beneficial
D) can both be beneficial and negative

Advanced Cockpit Automation:

Which of the following drawbacks are associated with automation?

1. Reduced competence in manually controlling the aircraft.
2. Increased likelihood of slips while programming automatic systems.
3. Difficulties in adapting to the use of a sidestick.
4. General decrease in technical reliability.

A) 1,2
B) 1,4
C) 2,3,4
D) 1,3

List automation disadvantages:

A) It can be difficult to make lask minute changes.
B) Flight crew can lose situational awareness if they are complacent.
C) It can be difficult to understand all the modes.
D) All of the above are correct.

If man is compared with a computer, it can be said that man:

A) has less effective means of action (output) than the computer
B) has more effective means of action (output) and is above all capable of considerable synergy
C) has less effective means of data collection than the computer
D) is relatively limited compared with a computer, that means of data collection or means of action are referred to

How can a pilot avoid automation complacency?

A) Nothing, because it is system-inherent.
B) Always try to enhance your aviation related knowledge during low workload periods.
C) Always fly the whole flight manually to remain in man-machine loop.
D) Regard the automatic system as additional crew members that needs to be crosschecked aa well.

List advantages of automation:

A) Easy to learn.
B) Automation will generally help pilots to make last minute changes.
C) All of the above are correct.
D) Reduced workload, more time to monitor systems, and, when managed properly, better situational awareness.

What is meant by the term complacency?

A) Careless negligence or unjustified self-confidence
B) To question possible solutions
C) An agreement between captain and co-pilot due to Crew Resources Management
D) Physiological consequences on pilots because of fear of flying

Define complacency:

A) A state of mind that can occur during routine operations.
B) Not paying attention and simply not using the senses properly.
C) A state of over arousal caused by: Stress, high workload and too complicated tasks.
D) B and C are correct.

A high degree of cockpit automation may alter the traditional tasks of the pilots in a way, that:

A) it is guaranteed that the crew maintains always situational awareness.
B) the attention of the cockpit crew will become reduced with the consequence of being out of the loop.
C) the crew can pay more attention to solve the problem in an abnormal situation without monitoring the automatic systems.
D) Crew Coordination can be neglected on long haul flights without compromizing safety.

Define automation complacency:

A) Automation complacency may occur because some flights are so completely automated, that pilots get tired from passive scanning, this can cause automation fatigue.
B) Automation complacency occurs when one crewmember is programming the automatic system in a complicated manner. Other crewmembers may not be able to understand such complicated use of automation.
C) Boredom and automation complacency may occur because some portions of flights are so completely automated, that pilots are lulled into inattention and are either bored or complacent.
D) Automation complacency can be caused by systems that are designed too complicated.

Which statement about automation is correct?

A) Pilots that always use autopilots can become less confident in their own basic airmanship skills.
B) High performing crews thoroughly discuss FMS and automation usage ahead of automation set-up and especially before arrival.
C) The new generation of automated aircraft have generally demonstrated an improved safety record.
D) All of the above are correct.

Why can complacency be a problem for experienced flight crew?

A) Older flight crew may perceive information at a slower rate to the natural ageing process.
B) Experienced crew members may overestimate their skills; this can cause errors when the brain is processing too complicated information.
C) Flying the same route and knowing what is going to happen can make experienced flight crew too relaxed.
D) Inexperienced flight crew may not be able to keep up with the fast and efficient manner that experienced flight crew can operate.

Which of the following operations are performed more effectively by automatic systems than by people?

1. Waiting for an infrequent phenomenon.
2. Long term controlling of a set value (eg holding of trajectory).
3. Monitoring to ensure that certain values are not exceeded (e.g holding of flight path).
4. Qualitative decision-making

A) 1,2,3
B) 3,4
C) 2,3,4
D) 2,4

The workload may be said to:

1. Be acceptable if it requires more than 90 % of the crew resources.
2. Be acceptable if it requires about 60 % of the crew resources.
3. Depend on the pilots expertise.
4. Correspond to the amount of resources available.

The combination of correct statements is:

A) 1, 3 and 4 are correct
B) 2 and 4 are correct
C) 1 and 3 are correct
D) 2, 3 and 4 are correct

The use of modern technology applied to glass-cockpit aircraft has:

A) considerably improved all the communication facilities of the crew.
B) reduced the scope for non-verbal communication in interpersonal relations.
C) improved man-machine communication as a result of flight sensations.
D) facilitated feedback from the machine via more concise data for communication on the flight deck.

Too high workload can cause several problems. Which problem has been a contributing factor in many accidents?

A) Loss of situational awareness.
B) Poor visual scanning for other aeroplanes.
C) Hurry up errors.
D) Incapacitation.

Which of the following operations are performed more effectively by people than by automatic systems?

1. Qualitative decision-making.
2. Waiting for an infrequent phenomenon.
3. Monitoring to ensure that certain values are not exceeded.
4. Detections of unusual conditions (smell, noise, etc.).

A) 2, 3, 4
B) 1, 4
C) 3, 4
D) 1, 2

What is automation mode awareness?

A) Being aware of the active mode(s) and understanding the corresponding actions and responses, is necessary for proper use of the automated system.

B) Examples of mode awareness include, vigilance- and situational-awareness.

C) A and B are correct.

D) It refers to what mode of awareness a crew has during automated flight.

What would be the priority aim in the design of man-machine interfaces and in the creation of their application procedures for combating problems associated with human error?

A) To put in place redundant alarm systems

B) To eliminate the risk of latent errors occurring

C) To reduce the risks of the appearance or non-detection of errors entailing serious consequences

D) To cater systematically for the consequences of errors in order to analyse their nature and modify ergonomic parameters