Question: Parallax error is:

- **A. a reading error.**
- B. due to the effect of aircraft accelerations.
- C. due to temperature effect.
- D. due to pressure effect.

Question: If the static intakes are completely clogged up by ice during a climb, the VSI shows:

- A. a descent if the outside static pressure is less than the pressure in the VSI-gauge.
- B. an increasing rate of climb if the ambient static pressure decreases.
- **C. zero.**
- D. a constant rate of climb, even if the aircraft is levelling out.

Question: A vertical speed indicator measures the difference between:

- A. the total pressure and the static pressure.
- B. the dynamic pressure and the static pressure.
- **C. the instantaneous static pressure and the static pressure at a previous moment.**
- D. the total instantaneous pressure and the total pressure at a previous moment.

Question: The purpose of the vibrating device of an altimeter is to:

- A. inform the crew of a failure of the instrument.
- B. allow damping of the measurement in the unit.
- C. reduce the pressure error.
- **D. reduce the effect of friction in the linkages.**

Question: The total pressure probe (pitot tube) comprises a mast which moves its port to a distance from the aircraft skin in order:

- **A. to locate it outside the boundary layer.**
- B. it is protected from icing.
- C. it is easily accessible during maintenance checks.
- **D.** not to disturb the aerodynamic flow around the aircraft.

Question: When descending at a constant CAS in a standard atmosphere:

1. mach number remains constant.
2. TAS increases.
3. **mach number decreases.**
4. **TAS decreases.**

It seems that this question has 2 correct answers,TAS Decreases and MACH number DECREASES."TAS decreases" is the one which the examiner wants to see.If you get this question in your exam please let your Groundschool know so it can be appealed.If you get to see what answer is expected please can you send an email to support@atplonline.co.uk ?

Question: The Mach number is uqual to: NB "a" indicates the local speed of sound.

1. CAS/a
2. CAS/a
3. IAS/a
4. **TAS/a**

Question: An aeroplane is cruising at FL 60 with a TAS of 100 kt in standard atmosphere. In these conditions:

1. **the TAS is approximately 10% higher than the IAS**
2. **the difference between the EAS and the CAS is negligible**

3. **the speed displayed on the airspeed indicator is a CAS if the position error and instrument error are zero** The combination regrouping all of the correct statements is:

Question: Given: Zp = pressure altitude, Zd = density altitude. CAS can be obtained from the following data:

A. TAS and Zd.
B. EAS and Zd.
C. EAS and Zp.
D. TAS and Zp.

This is not a great question to be asking.

Think of the process on the whizz wheel. To get from CAS via EAS to TAS we use pressure altitude and temperature. To go back from TAS via EAS to CAS we would again use pressure altitude and temperature. You are correct when you say that temperature is a factor. However, it is the entry with pressure altitude and temperature which corrects for density errors (the fact that the ASI is calibrated to an atmospheric density value of 1225gm/cuM.); we do not use density altitude because we are correcting for the difference between 1225gm/cuM and actual density.

Question: During a climb, the total pressure probe of the airspeed indicator becomes blocked; if the pilot maintains a constant indicated airspeed, the true airspeed:

A. decreases by 1% per 600 FT.
B. increases by 1% per 600 FT.
C. increases until reaching VMO.
D. decreases until reaching the stall speed

With the pitot tube blocked the ASI will progressively over-read in the climb. If you are flying a constant indicated speed then, in real terms, the aircraft will actually be getting slower and slower until you eventually stall!

Question: With EAS and pressure altitude (Zp), we can deduce**: CAS.**

Question: The pressure altitude is the altitude corresponding :

in standard atmosphere, to the pressure Ps prevailing at this point

Question: The position error of the static vent on which the altimeter is connected varies substantially with the:

A. static temperature
B. Mach number of the aircraft
C. flight time at high altitude.
D. deformation of the aneroid capsule

It is a fact that pressure errors on pitot/static systems vary with aircraft speed, but specifically with Mach No.

Question: The altimeter is subject to the position error; this error varies substantially with the:

1. Mach number.
2. flight time at high altitude.
3. OAT.
4. deformation of the aneroid capsule.

Question: The machmeter is subject to position error. This error concerns:

1. pitot tubes and static ports.
2. alternate static sources only.
3. static ports only.
4. pitot tubes only.

Question: The density altitude is :

1- the altitude of the standard atmosphere on which the density is equal to the actual density of the atmosphere
2- the pressure altitude corrected for the density of air at this point
3- the pressure altitude corrected for the relative density prevailing at this point
4- the temperature altitude corrected for the difference between the real temperature and the standard temperature

Question: The QNH is by definition the value of the:

1- atmospheric pressure at the sea level of the location for which it is given.
2- atmospheric pressure at the level of the ground overflown by the aircraft.
3- altimeter setting so that the altimeter, on the apron of the aerodrome for which it is given, reads zero.
4- **altimeter setting so that the altimeter, on the apron of the aerodrome for which it is given, reads the elevation.**

Question: The altimeter is supplied with:

A. static pressure.
B. dynamic pressure.
C. differential pressure.
D. total pressure.

Question: Below the tropopause in standard conditions, when descending at a constant Mach number:

A. TAS increases.
B. the difference between surrounding conditions and ISA must be known to deduce the TAS variation.
C. TAS decreases.
D. TAS remains constant.

Do an example on the CRP5 with fixed CAS and altitude; note the effect of decreasing temperature – TAS decreases:
CAS is a measure of dynamic pressure = $\frac{1}{2}\rho V^2$
Where ρ = air density and V = TAS
In colder air ρ will increase.
If CAS is to remain constant V (TAS) must decrease

Question: With constant weight and configuration, an aeroplane always takes off at the same:

A. ground speed.
B. EAS.
C. IAS.
D. TAS.

This question has appeared in the instruments exam but should be in Performance of P of F. If it comes in your exam you should appeal it.

Question: The Mach number is: MN = TAS/LSS

A. the ratio of the aircraft conventional airspeed to the sonic velocity at the altitude considered
B. a direct function of temperature ; it varies in proportion to the square root of the absolute temperature
C. the ratio of the aircraft true airspeed to the sonic velocity at the altitude considered
D. the ratio of the indicated airspeed to the sonic velocity at the altitude considered

Question: An aeroplane is in steady descent. The auto-throttle maintains a constant calibrated airspeed. If the total temperature remains constant, the Mach number:

1- increases.
2- increases if the static temperature is lower than the standard temperature, decreases if higher.
3- decreases.
4- remains constant.

Question: An airplane is in steady cruise at flight level 290. The auto-throttle maintains a constant Mach number. If the total temperature decreases, the calibrated airspeed:

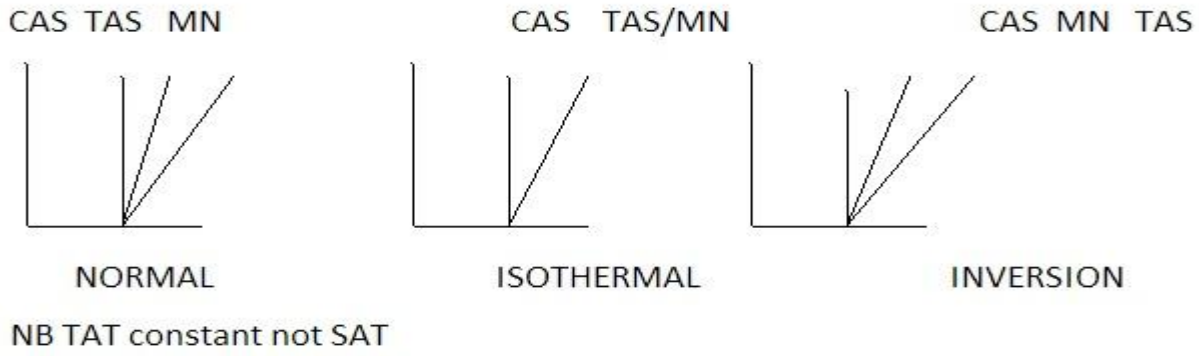
1. decreases if the outside temperature is lower than the standard temperature, increases if higher.
2. decreases.
3. increases.
4. **remains constant.**

Question: An aeroplane is in steady cruise at flight level 270. The auto-throttle maintains a constant calibrated airspeed. If the static air temperature increases, the Mach number:

1- increases.
2- decreases.
3- decreases if the outside temperature is higher than the standard temperature, increases if lower.
4- **remains constant.**

Aircraft maintains constant CAS = 1/2rho V2
An increase in temperature will decrease density Rho ? To maintain CAS V must increase! This is TAS An increase in temp will increase LSS ! Mach no =TAS/LSS both have gone up. Mach number stays the same.You could input the data on your CRP5 to prove this with actual figures example
FL 150 OAT 0 CAS 170 = TAS =220 LSS = 645
220/645 =M0.34
Fl 150 OAT +25 CAS 170 = TAS 230 LSS = 675
230/675 = M0.34

Mathematically: MN = TAS/LSS if temperature decreases then TAS and LSS both decrease keeping MN constant. There are questions in the question bank covering all possible combinations; i.e.;
Temperature increase or decrease CAS constant what happens to MN
MN constant what happens to CAS **The answer is "it remains constant".**



Question: When climbing at a constant Mach number through an isothermal layer, the CAS:

A. decreases if OAT is lower than the standard temperature, increases if higher.
B. increases.
C. remains constant.
D. decreases.

Question: If OAT decreases when at a constant Mach number:

A. TAS increases.
B. TAS decreases. If OAT decreases the LSS decreases and TAS = MN x LSS
C. TAS remains constant only if the flight level remains constant.
D. TAS decreases only if the flight level remains constant.

Question: If OAT decreases when at a constant TAS:

A. the difference between surrounding conditions and ISA must be known to deduce the Mach number variation.
B. Mach number remains constant.
C. Mach number decreases.
D. **Mach number increases.** As it gets colder the local speed of sound will decrease.

MN = TAS/LSS = Constant/Decreasing = İncreasing

Question: In the following formula EAS = CAS x K , the compressibility factor K:
1 - may be greater than 1
2 - is always lower or equal to 1
3 - depends on Mach number only
4 - depends on pressure altitude only
The combination that regroups all of the correct statements is:
Question: The combined Machmeter / ASI is subject to the following errors:

A. instrument, pressure and temperature only.

B. those of a Machmeter only.
C. position, density, instrument, compressibility, manoeuvre induced.
D. instrument and compressibility only.

Question: Assuming the flight level and Mach number remain constant, when the OAT decreases:

1. CAS decreases and TAS increases.

2. CAS and TAS both decreases.

3. CAS remains constant and TAS increases.

4. **CAS remains constant and TAS decreases.**

Question: If OAT decreases whilst maintaining a constant CAS and flight level:

A. TAS increases.
B. Mach number remains constant.
C. TAS remains constant.
D. Mach number increases.

It is a fact that if you are in straight and level flight and the temperature changes both CAS and MN will remain the same. Pitot and static pressures are not changing: CAS = P - S and MN = (P - S)/S. TAS will change: if temperature decreases then air density will increase and TAS will decrease.

If all else fails give yourself an example on the whizz wheel.

Question: The maximum TAS is obtained at:

A. the maximum Flight Level.
B. the Flight Level at which simultaneously CAS = VMO and M = MMO.
C. all the Flight Level(s) where M =MMO.
D. all the Flight Level(s) where CAS =VMO.

Question: An aircraft is descending from FL 390 to ground level at maximum speed. The limits in speed will be:

A. the VMO only.
B. the MMO only.
C. initially the VMO, then the MMO below a certain flight level.
D. initially the MMO, then the VMO below a certain flight level.

Question: The principle of the Mach indicator is based on the computation of the ratio :

1. **(Pt - Ps)/Ps**

Question: Indication of Mach number is obtained from: The Mach Meter modifies the output from an airspeed capsule by using an altimeter (aneroid) capsule.

A. Indicated speed and altitude using a speed indicator equipped with an altimeter type aneroid
B. A kind of echo sound comparing velocity of sound with indicated speed
C. Indicated speed (IAS) compared with true air speed (TAS) from the air data computer
D. An ordinary airspeed indicator scaled for Mach numbers instead of knots

Question: Considering an airspeed indicator, a second striped needle, if installed, indicates:

A. VNE.
B. VMO. The "barbers' pole" shows maximum operating speed (VMO) which will vary with altitude.

C. VNE or VMO, depending on which is the higher.
D. VNE or VMO, depending on which is the lowest.

Question: Given: Pt = total pressure Ps = static pressure Pso = static pressure at sea level. Calibrated airspeed (CAS) is a function of: **Pt – Ps** CAS is proportional to Dynamic = Pitot (Total) – Static.

Question: During descent, the total pressure probe of the airspeed indicator becomes blocked. In this case:

With the pitot blocked the pressure in the capsule (D + S) is fixed. In the descent the static in the case increases which compresses the capsule causing the reading to decrease.PUD
= Pitot blocked, Under reads in Descent. If the airspeed indicator is under reading it would be possible to exceed VMO.

1. IAS becomes greater than CAS
2. **IAS becomes lower than CAS**
3. **maintaining IAS constant, VMO may be exceeded**
4. maintaining IAS constant, aircraft may stall The combination regrouping all the correct statements is:

Question: If an aircraft maintaining a constant CAS and flight level is flying from a cold air mass into warmer air:

This question asks about OAT changes at constant CAS again. You can discount two of the options because, as above, you know that MN is constant. So you want the relationship between CAS and TAS. The best way to think about this is the formula*Dynamic pressure = 1/2 x density x TAS^2* but I think of constant CAS as constant dynamic pressure. So, if air becomes less dense, the only other thing that can change in this equation is the TAS increasing to compensate.

1. Mach number decreases.
2. TAS decreases.
3. **TAS increases.**
4. Mach number increases.

Question: If an aircraft maintaining a constant CAS and flight level is flying from a warm air mass into colder air:

MN = (P – S)/S; P and S are not changing so MN won't change.
CAS is a measure of dynamic pressure = ½ ρV2
Where ρ = air density (decreasing in warmer air) and V = TAS (decreasing to keep CAS constant)

1. Mach number decreases.
2. TAS increases.
3. **TAS decreases.**
4. Mach number increases.

Question: The compressibility correction to CAS to give EAS:

1 - may be positive

2 - is always negative

3 - depends on Mach number only

4 - depends on pressure altitude only The combination regrouping all the correct statements is:

Question: During a climb at a constant Mach number below the tropopause in ISA conditions:

Compressibility error always results in an incorrect and higher IAS/CAS being observed on the ASI in the cockpit, therefore when calculating the correct TAS you have to reduce CAS by a few knots (to EAS) and use that instead to calculate TAS.

A. CAS increases and TAS decreases.
B. CAS decreases and TAS increases.
C. CAS and TAS increase.
D. CAS and TAS decrease

Question: Considering the relationship between CAS and EAS:

A. EAS is always greater than or equal to CAS.
B. EAS may be lower or greater than CAS, depending on density altitude.
C. EAS is always lower than or equal to CAS.
D. EAS may be lower or greater than CAS, depending on pressure altitude.

Question: During a climb at a constant Mach number below the tropopause in standard atmosphere:

A. CAS increases and TAS decreases.
B. CAS decreases and TAS increases.

C. CAS and TAS increase.
D. CAS and TAS decrease.

Question: Concerning the airspeed indicator, IAS is:

A. the indicated airspeed corrected for instrument error only.
B. the indicated reading on the instrument.
C. the indicated reading on an instrument presumed to be perfect.
D. the indicated airspeed corrected for instrument and position errors.

Question: Assuming the flight level and Mach number remain constant, when the OAT increases:

A. IAS decreases and TAS increases.
B. IAS increases and TAS decreases.
C. IAS and TAS decrease.
D. IAS remains constant and TAS increas

MN = (P – S)/S and CAS (IAS) = P – S; P and S are not changing so CAS (IAS) won't change.
CAS (IAS) is a measure of dynamic pressure = ½ ρV2
Where ρ = air density (decreasing in warmer air) and V = TAS (increasing to keep CAS constant) and
TAS = MN x LSS = Constant x Increasing (in warmer air) =increasing

Question: Maintaining CAS and flight level constant, a fall in ambient temperature results in:

A. lower TAS because air density decreases.
B. lower TAS because air density increases.
C. higher TAS because air density decreases.
D. higher TAS because air density increases.

Question: An aeroplane is cruising at FL 220. The auto-throttle maintains a constant CAS. If the OAT decreases, the Mach number:

A. decreases.
B. **remains constant.** Remains constant. It is a fact; if temperature changes the TAS will change but CAS and MN will remain constant.The change in temperature does not change pitot or static pressures, only air density. CAS = P - S and MN = (P - S) / S
C. decreases if OAT is lower than standard temperature, increases in the opposite case.
D. increases.

Question: When descending at a constant CAS through an isothermal layer, the Mach number:

A. increases.
B. remains constant.
C. increases if OAT is lower than the standard temperature, decreases if higher.
D. **decreases.** As you descend air density will increase, so at constant CAS, TAS will decrease and Mach No. will decrease.

Question: In standard atmosphere at sea level, the EAS is: **equal to the TAS**. IAS corrected for instrument, position (pressure) and compressibility errors gets us to EAS. The ASI is calibrated to msl conditions in ISA so EAS = TAS.

Question: In a standard atmosphere and at the sea level, the calibrated airspeed (CAS) is:

equal to the true airspeed (TAS).

Question: To be as accurate as possible, an anemometer must be calibrated according to the following formula:

A. Bernoulli, taking into account the air compressibility.
B. Saint-Venant, taking into account the air compressibility
C. Bernoulli, considering the air as an uncompressible fluid.

Absolute twaddle but it is in the question bank and the examiner insists that answer "Saint-Venant, taking into account the air compressibility" is correct. Firstly an anemometer measures the speed of the air (wind speed) and not the air speed of the aircraft. Secondly the Saint-Venant formulae deal with pressure in flood water and pressures exerted on dams; the air speed indicator is calibrated assuming standard atmosphere conditions using Bernoulli's formula.

D. Saint-Venant, considering the air as an uncompressible fluid.

Question: The TAS is equal to the EAS only if:

P = 1013,25 hPa and OAT = 15°C.

Question: The alternate static source of a non-pressurized aircraft is located in the flight deck; as the alternate static source is opened, the vertical airspeed indicator may:

A. indicate a slight momentary descent.
B. indicate a high rate of descent.
C. indicate a momentary climb.
D. be blocked.

Question: The use of an alternate static source fed from within the cabin results that the static pressure sensed is likely to be:

A. higher than ambient pressure due to aerodynamic suction.
B. lower than ambient pressure due to position error.
C. higher than ambient pressure due to position error.
D. lower than ambient pressure due to aerodynamic suctio

The alternate static source will sense a slightly lower pressure than the normal source due to aerodynamic suction acting on the cockpit. This lower pressure will be fed immediately to the inside of the capsule, and also with a slight delay to the whole of the instrument case. Therefore, for a short period the capsule will contract, giving a momentary climb indication.

Question: The total pressure probe (pitot tube) is mounted at a d
such that:

A. it is easily accessible during maintenance checks.
B. it is protected from icing.
C. it does not disturb the aerodynamic flow around the aircraft.
D. it is located outside the boundary layer.

Question: The sensor(s) feeding the EPR-indicator is(are):

A. temperature probes, one located upstream from the compressor inlet, and an other downstream from the turbine outlet.
B. Tachometer located on the shaft of the N1 compressor.
C. pressure probes, one located upstream from the compressor inlet, and the other downstream from the turbine outlet.
D. tachometer located on the shaft of the N2 compressor.

Question: The EPR is computed by:

A. multiplying compressor discharge pressure by turbine inlet pressure.
B. dividing turbine discharge pressure by compressor inlet pressure.
C. multiplying compressor inlet pressure by turbine discharge pressure.
D. dividing compressor discharge pressure by turbine discharge pressure.

Question: A gravity type erector is used in a vertical gyro device to correct errors on:

A. a directional gyro unit
B. a gyromagnetic indicator
C. a turn indicator
D. an artificial horizon The artificial horizon is the only gyro instrument with a vertical gyro and a gravity sensor.

Question: Different pressure sensors are used according to the intensity of the pressure measured (low, medium, high), different types of pressure sensors are used. Classify the following sensors by

order of increasing pressure for which they are suitable**: 3- aneroid capsule:1- bellows type 2- Bourdon tube type**

Question: An aneroid capsule: 1 - measures differential pressure **2 - measures absolute pressure 3 - is used for low pressure measurement** 4 - is used for very high pressure measurement The combination regrouping all the correct statements is:

Question: The probe used to measure the air intake pressure of a gas turbine engined powerplant is:

A. **an aneroid capsule.** Aneroid capsules measure low pressures such as atmospheric pressure.
B. a differential capsule.
C. a Bourdon tube.
D. a bellows sensor.

Question: The engine instrument utilising an aneroid pressure diaphragm is the:

A. fuel pressure gauge.
B. manifold pressure gauge.
C. oil temperature gauge.
D. oil pressure gauge.

Question: The altimeter consists of one or several aneroid capsules located in a sealed casing. The pressures in the aneroid capsule (i) and casing (ii) are respectively:

A. static pressure (ii) total pressure
B. total pressure (ii) static pressure
C. static pressure at time t (ii) static pressure at time t - dt
D. vacuum (or a very low pressure) (ii) static pressure

Question: During an acceleration phase at constant attitude, the control system of the artificial horizon results in the horizon bar indicating a:

A. nose-down followed by a nose-up attitude
B. nose-down attitude
C. constant attitude
D. **nose-up attitude** An air-driven artificial horizon gives a false indication of pitch up with bank right on acceleration and pitch down with bank left on deceleration.

Question: If an EPR is set at a constant barometric pressure, with an increasing OAT, the thrust

A. remains constant
B. increases
C. decreases.
D. varies according to the characteristics of the engine

I don't like this question on EPR at constant barometric pressure. On a modern engine the fuel control system does trim fuel automatically to maintain selected thrust settings for changes in OAT. It can only do that up to the engines flat rated limit about 30 degrees C, above which thrust and EPR would reduce. Earlier engines required temperature adjustments to be made to EPR values.
My advice for the exam would be to remember this one! We will take it up with the exam cell.

Question: Which of the following statements are correct for an aeroplane cruising at FL 60 with a true airspeed (TAS) of 100 kt in standard atmospheric conditions? **1 - The TAS is approximately 10% higher than the IAS. 2 - The difference between the equivalent airspeed (EAS) and the calibrated airspeed (CAS) is negligible. 3 - The speed displayed on the airspeed indicator is a calibrated airspeed (CAS) if the position error and instrument error are zero.**

Question: The quadrantal deviation of the magnetic compass is due to the action of :

A. the hard iron pieces influenced by the geomagnetic field
B. the hard iron pieces influenced by the mild iron pieces
C. the hard iron ices and the soft iron pieces influenced by the hard iron pieces
D. the soft iron pieces influenced by the geomagnetic field

Since the soft iron magnetism is induced in the airframe by the Earth's field and not by the aircraft's own hard iron magnetism

Question: Which of the following statements about hard and soft iron in relation to magnetism is correct?

A. Hard iron is of a non-permanent nature and soft iron is of a permanent nature.
B. Hard iron magnetism is of a permanent nature and soft iron is of a non-permanent nature. Hard iron = permanent, soft iron = temporary.
C. Both hard and soft iron are of a non-permanent nature.
D. Both hard and soft hard iron are of a permanent nature.

Question: A pilot wishes to turn left on to a southerly heading with 20° bank at a latitude of 20° North. Using a direct reading compass, in order to achieve this he must stop the turn on an approximate heading of:

A. 190°
B. 170°
C. 160°
D. 200°

Try using this law : North Before, South After.
Means if you are turning to a southerly heading you should stop your turn AFTER south
As you are turning left , the turn direction is from North to South in the anti-clockwise direction. So overturn through south is 160
With a right turn to a southerly direction . Turn direction would be from North to south in the clockwise direction , and then overturn through south would be around 210 °

Question: A pilot wishes to turn right on to a southerly heading with 20° bank at a latitude of 20° North. Using a direct reading compass, in order to achieve this he must stop the turn on an approximate heading of:

A. 150°
B. 200°
C. 180°
D. 170°

Northern hemisphere: **U**nder turn through
(UNOS) **N**orth (i.e. stop turn early, before required heading)
Over turn through
South (i.e. turn through required heading)

Allow 20° of under or over turn.

Question: A pilot wishes to turn right on to a southerly heading with 20° bank at a latitude of 20° North. Using a direct reading compass, in order to achieve this he must stop the turn on an approximate heading of :

A. 150°
B. 170°
C. 210°
D. 190°

Here goes! If you read the explanation of turning error in the book you will appreciate that in this question the compass will end up overreading due to this particular problem (ie the indicated heading will be greater than the correct heading). With regard to the amount of over read we believe most schools use a rather simplified approach as follows Required Final Heading Turning Error 360 - 030 30 degrees 030 - 060 20 degrees 090 10 degrees 090 - 120 10 degrees 120 - 150 20 degrees 150 - 180 30 degrees 180 - 210 30 degrees 210 - 240 20 degrees 240 - 270 10 degrees 270 - 300 10 degrees 300 - 330 20 degrees 330 - 360 30 degrees Therefore;(1) to roll out on a correct heading of 180 you will need to see 180+30 on the compass(2) to roll out on a correct heading of 360 you will need to see 360+30 on the compass

Question: A pilot wis
North. Using a direct r
approximate heading

A. 030°
B. 330°
C. 015°
D. 355°

Remember UNOS in the northern hemisphere; to turn through – or in this case on to – North the pilot should 'underturn' (i.e. stop the turn early. 355º and 330º are 'late' stops. The examiner expects about 20º to be applied so 30º would be too much. Stopping the turn 15º early is not enough, use 30º

Question: Concerning the direct reading magnetic compass, the turning error:

A. decreases with the magnetic longitude.
B. decreases with the magnetic latitude.
C. does not depend on the magnetic latitude.
D. increases with the magnetic latitude.

As magnetic latitude increases, the angle of dip increases and turning errors (and acceleration errors) increase.

Question: The turning error of a direct reading magnetic compass:

A. does not depend on the magnetic latitude.
B. increases when the magnetic latitude increases.
C. decreases when the magnetic longitude increases.
D. decreases when the magnetic latitude increases.

Question: In a steep turn, the northerly turning error on a magnetic compass on the northern hemisphere is:

A. none on a 090° heading in a right turn.
B. All answers are incorrect.
C. none on a 270° heading in a left turn.
D. equal to 180° on a 090° heading in a right turn.

Question: A pilot wishes to turn right through 90° on to North at rate 2 at latitude of 40 North using a direct reading compass. In order to achieve this the turn should be stopped on an indicated heading of approximately:

A. 030°
B. 360°
C. 010°
D. 330°

Question: The turning errors of a direct reading magnetic compass are:

A. maximum at the magnetic poles.
B. maximum at the magnetic equator.
C. minimum at the magnetic poles.
D. minimum at a latitude of 45°.

Turning and acceleration errors are caused by magnetic dip which is maximum at the magnetic poles.

Question: An aircraft takes-off on a runway with an alignment of 045°; the compass is made for the northern hemisphere. During rolling take-off, the compass indicates:

A. a value below 045°.
B. a value above 045° in the southern hemisphere.
C. a value above 045° in the northern hemisphere.
D. 045°.

Some compass systems for light aircraft are balanced (by applying weights) in order to reduce the residual angle of dip in a particular hemisphere. In this question the inference is that the aircraft is flying in the Northern Hemisphere.

Question: In the northern hemisphere, an aircraft takes-o 5°. During the take-off run, the compass indicates:

A. a value above 045°.
B. 045.°
C. 225°.
D. a value below 045°.

Question: Direct reading magnetic compass errors are:

A. parallax errors due to compass rose oscillations.
B. due to north change, depending on the bank angle and magnetic heading.
C. due to the lateral gusts which occur when the aircraft is heading eastward or westward.
D. due to Schuler oscillations.

Question: In the northern hemisphere, during deceleration following a landing in a northerly direction, a direct reading magnetic compass indicates:

A. an apparent turn to the east.
B. an apparent turn to the south.
C. an apparent turn to the west.
D. no apparent turn.

'North change' = displacement of the compass needle. Lateral gusts do not affect the compass. Schuler oscillations are applicable to gyro stabilised platforms. Parallax errors are caused by reading the compass from the wrong angle, not by scollations of the compass

Question: During deceleration following a landing in a southerly direction, a magnetic compass made for the northern hemisphere indicates:

A. no apparent turn.
B. an apparent turn to the west.
C. no apparent turn only on northern latitudes.
D. an apparent turn to the east.

When accelerating or decelerating the errors on the direct reading magnetic compass are maximum on East and West and zero on North and South.

Question: In the northern hemisphere, during a take-off run in a westerly direction, a direct reading magnetic compass indicates:

A. an apparent turn to the south.
B. an apparent turn to the north.
C. an apparent turn to approximately the heading 255°.
D. no apparent turn.

Question: During deceleration following a landing in a westerly direction, a magnetic compass made for the northern hemisphere indicates:

A. an apparent turn to the north.
B. an apparent turn to the south.
C. no apparent turn only on northern latitudes.
D. no apparent turn.

Northern hemisphere: **A**cceleration gives apparent turn to **N**orth
(ANDS)
Deceleration gives apparent turn to **S**outh

Question: During deceleration following a landing in an easterly direction, a magnetic compass made for the northern hemisphere indicates:

A. an apparent turn to the north.
B. no apparent turn.
C. no apparent turn only on northern latitudes.
D. an apparent turn to the south.

A compass 'made for the northern hemisphere' will be biased so that the compass needle/magnet assembly has its centre of gravity on the south (equator) side of the pivot point. As the aircraft decelerates on landing the centre of gravity is thrown forward, causing the compass needle to be deflected anti-clockwise and the reading increasing from 090° to more than 090°.

Question: Total Air Temperature (TAT) is:

A. higher or equal to Static Air Temperature (SAT) depending on altitude and SAT
B. lower than Static Air Temperature (SAT) depending on altitude and SAT
C. lower than Static Air Temperature (SAT) depending on Mach number and SAT
D. higher or equal to Static Air Temperature (SAT) depending on Mach number and SAT

The 'ram-rise' always causes the indicated temperature (TAT) to be too high and the error will vary with speed (TAS or MN).

A. the static air temperature (SAT) multiplied by the recovery factor.
B. the temperature resulting from the aircraft motion in the air. TAT = SAT – Ram Rise
C. the average temperature resulting from the temperature measure of the pitot and TAT probes.
D. the impact air temperature measured by the pitot probe.

Question: The most common system used to monitor turbine gas exhaust temperature is the:

A. hot and cold junction, alumel/chromel system.
B. hot junction Tungsten/copper system.
C. flame switch.
D. fixed junction mercurial oxide/chromium system.

Question: Electrical requirements for an alumel/chromel indicating system are

A. power for gauge lighting only.
B. 28VDC for sensor plus power for gauge lighting.
C. 3 phase AC for sensor plus 26VAC for gauge lighting.
D. 3 phase AC for sensor plus 28VDC for gauging.

Alumel & Chromel are the 'two dissimilar metals' that make up a thermocouple which is used to measure high temperatures such as jet exhaust. The heat alone causes a voltage between the two metals (see notes) which gives a reading on the instrument.
Therefore, the only other power required is to light up the gauge!

Question: Concerning the direct reading magnetic compass, the turning error:

A. acceleration errors are due to Schüler oscillations
B. acceleration errors are due to the angle of dip.
C. errors of parallax are due to the oscillation of the compass rose
D. turning error is due to the vertical component of the earth's magnetic field

Turning error increases as the vertical component of the Earth's field (Z) increases.

Question: To indicate a temperature, a thermocouple requires:

A. direct current.
B. battery power.
C. no power supply.
D. alternating current.

Question: Given: E = electromotive force (emf) Tc = cold junction temperature Th = hot junction temperature K = constant The relationship that applies to a thermocouple is:

1. E = K x Th E=K x T

Question: The static air temperature (SAT) is :

1. an absolute temperature expressed in degrees Celsius

Question: The sensors used to measure the exhaust gas temperature on an aircraft equipped with gas turbine engine are:

1. **thermocouples.**

Question: In order to measure temperature the cylinder head temperature (CHT) gauge utilises a:

A. bourdon tube.
B. thermocouple consisting of two dissimilar metals. Therocouples are used for measuring high temperatures.
C. ratiometer circuit.

D. wheatstone bridge circuit.

Question: The aeroplane outside air temperature probe measures the:

1. total air temperature minus kinetic heating effects in order to obtain the static temperature.
   Always apply a negative correction (due to kinetic heating) to TAT (IOAT) to get SAT (COAT).

Question: The measurement of the turbine temperature or of the EGT is carried out at the:

1. outlet of the combustion chamber.
2. **outlet of the high pressure stage of the turbine.**
3. inlet of the high pressure chamber.
4. inlet of the combustion chamber.

This question is a little confusing. We believe the JAA/CAA definition of EGT for this question comes from a book produced by Rolls Royce on Jet engines.The book does not state EGT is measured at the HP turbine outlet but is does show a picture of a thermocouple located between the HP turbine and LP turbine which we believe is the reason this question defines EGT as being HP turbine outlet temperature.
The names given to the location of the temperature sensors are in many cases type specific.We have appealed this question in the past but we believe the question is still in the current question bank.

Question: A millivoltmeter measuring the electromotive force between the "hot junction" and the "cold junction" of a thermocouple can be directl[illegible] the temperature of the:

A. hot junction is maintained at 15 °C.
B. cold junction is maintained constant.
C. cold junction is maintained at 15 °C.
D. hot junction is maintained constant.

The cold junction must be maintained at ambient temperature (constant); it does not have to be at +15ºC.
The hot junction will be in the engine or where ever the temperature is to be measured.

Question: Magnetic compass errors are:

A. due to the lateral gusts which occur when the aircraft is heading eastward or westward.
B. due to Schuler oscillations.
C. parallax errors due to compass rose oscillations.
D. about north change, depending on the bank angle and magnetic heading.

"North change" = deflection of the compass needle cause by turning."

Question: The principle of capacity gauges is based on the capacitance variation of:

A. two dissimilar metals joined together at their ends.
B. liquids with the variations in temperature.
C. two dissimilar metals joined together at one end only.
D. a capacitor with the type of dielectric.

Question: Modern low altitude radio altimeters emit waves in the following frequency band:

A. UHF (Ultra High Frequency).
B. SHF (Super High Frequency).
C. HF (High Frequency).
D. VLF (Very Low Frequency).

Question: The radio altimeter uses the following wavelengths:

A. myriametric.
B. metric.
C. millimetric
D. centimetric.

Question: Given the following parameters, in a capacitance fuel gauge, the correct formula is: A = area of plates D = distance between plates E = dielectric permittivity

1. **Capacitance = E x A / D**

Question: The unit used to measure the capacitance of a capacitor is the:

1.Farad.

Question: The operation of the radio altimeter of a modern aircraft is based on:

A. a combination of frequency modulation and pulse modulation.
B. pulse modulation of the carrier wave.
C. frequency modulation of the carrier wave. Height is calculated from frequency change.
D. amplitude modulation of the carrier wave.

Question: The indication of a fuel float gauge varies with: **1 - pitch attitude 2 - accelerations 3 - fuel temperature** The combination that regroups all of the correct statements is:

Attitude and acceleration moves the fuel around. The overall volume of fuel changes considerably with temperature.

Question: The disavantages of an "electric" fuel (float) gauge are : 1- the design is complex **2- the indications are influenced by the airplane attitude variations 3- the indications are influenced by the accelerations 4- the indications are influenced by temperature variations** 5- that an alternative current supply is necessary The combination regrouping all the correct statements is :

An electric fuel float gauge uses a DC supply, but there is no alternative supply to it. It works on the principle that as the float moves it operates a wiper arm that varies the resistance in a coil and thus the current flow.
The variation in current flow then determines the position of a pointer.

Question: The advantages of an "electric" fuel (float) gauge are : **1- easy construction** 2- independence of indications with regard to airplane attitude 3- independence of indications with regard to the accelerations 4- independence of indications with regard to temperature variations 5- independence of indications with regard to vibrations The combination regrouping all the correct statements is:

Question: The electric float gauge: 1 - gives a mass information; 2 - gives information independent of aircraft's manoeuvres and attitude changes; 3 - gives information all the more accurate as the tank is full; **4 - is typically a DC powered system.** The combination regrouping all the correct statements is:

Question: The float type fuel gauges provide information on:

1. mass with the result that the indication varies with the temperature of the fuel.
2. mass with the result that the indication is independent of the temperature of the fuel.
3. **volume with the result that the indication varies with the temperature of the fuel.**

Float gauges indicate only the volume of fuel in the tanks and this will vary as the fuel expands and contracts with temperature changes.

4. volume with the result that the indication is independent of the temperature of the fuel.

Question: The gauge indicating the quantity of fuel measured by a capacity gauging system can be graduated directly in weight units because the dielectric constant of fuel is:

A. the same as that of air and varies inversely with density.
B. twice that of air and varies directly with density. Dielectric constant is a measure of electrical capacitance or ability to hold an electrical charge.
C. the same as that of air and varies directly with density.
D. twice that of air and varies inversely with density.

Question: When compared with the volumetric fuel flowmeter, the mass fuel flowmeter takes into account the fuel:

A. turbulent flow in the line.
B. temperature.,
C. **density.** Volumetric flow is measured in litres or gallons. To convert volume to mass we need to take into account the density.
D. pressure.

Question: The basic principle of a capacitance fuel gauge system is that the:

A. electromotive force of a capacity depends on the nature of the dielectric in which it is immersed.
B. capacity of a capacitor depends only on the density of the liquid on which it is immersed.
C. capacity of a capacitor depends on the nature of the dielectric in which it is immersed.
D. internal resistance of a capacity depends on the nature of the dielectric in which it is immersed.

Question: Concerning a fuel gauge system, a pilot is more interested by the:

A. volume of the fuel than the mass of the fuel.
B. volume of the fuel than the permittivity of the fuel.
C. volume of the fuel than the density of the fuel.
D. mass of the fuel than the volume of the fuel.

Question: A float type fuel gauge: 1 - gives a mass information 2 - gives information independent of aircraft's manoeuvres and attitude changes 3 - gives information all the more accurate as the tank is full **4 - is typically a DC powered system** The combination that regroups all of the correct statements

Question: The advantages of a float type fuel gauge are (is): **1- easy construction** 2- independence of indications with regard to aircraft attitude 3- independence of indications with regard to the accelerations 4- independence of indications with regard to temperature variations The combination that regroups all of the correct statements is:

Question: If the tanks in your aircraft only contains water, the capacitor gauges indicate:

A. the exact mass of water contained in the tanks.
B. a mass equal to zero.
C. a mass equal to the mass of the same volume of fuel.
D. a mass of water different from zero, but inaccurate.

Question: The operating principle of an inductive probe tachometer is to measure the:

A. magnetic field produced by a dynamo or an alternator.
B. electromotive force produced by a dynamo or an alternator.
C. **frequency of the electric impulse created by a notched wheel rotating in a magnetic field.** The inductive probe is another name for the phonic wheel and operates by measuring the frequency of electric pulses crated by a notched wheel that rotates within a magnetic field. The synchronous motor type does not use a probe.
D. rotation speed of an asynchronous motor energized by an alternator.

Question: The flexible take-off mode: 1 - can be used only if the engines are recent **2 - reduces engine wear 3 - can be used in situations where take-off can be executed without the need for full engine power** 4 - can only be used with an auto-throttle The combination that regroups all of the correct statements is:

Question: What is the source of magnetic variation information in a Flight Management System (FMS)?

A. The FMS calculates MH and MT from the FMC position
B. Magnetic variation is calculated by each IRS based on the respective IRS position and the aircraft magnetic heading
C. The main directional gyro which is coupled to the magnetic sensor (flux valve) positioned in the wingtip
D. Magnetic variation information is stored in each IRS memory; it is applied to the true heading calculated by the respective IRS

Answer "Magnetic variation information is stored in each IRS memory; it is applied to the true heading calculated by the respective IRS" is not generally correct but it is better than the other options.There is no input from the gyro compass detector (flux valve) so "The main directional gyro which is coupled to the magnetic sensor (flux valve) positioned in the wingtip" is wrong. The FMS calculates magnetic heading and track from true heading and track, not from position, so "The FMS calculates MH and MT from the FMC position" is wrong. Magnetic variation is calculated by each IRS based on the respective IRS position and the aircraft true heading, not magnetic heading, so "Magnetic variation is calculated by each IRS based on the respective IRS position and the aircraft magnetic heading" is wrong. We are left with only one option!

Question: Concerning the flexible take-off mode, the temperature selected in the FMS is:

A. higher than the ambiant airfield temperature, in order to achieve an increased power setting.
B. lower than the ambiant airfield temperature, in order to achieve a reduced power setting.
C. lower than the ambiant airfield temperature, in order to achieve an increased power setting.
D. higher than the ambiant airfield temperature, in order to achieve a reduced power setting.

Question: The most favourable conditions to apply the flexible take-off procedure are: 1 - high take-off mass **2 - low take-off mass** 3 - high outside temperature **4 - low outside temperature 5 - high atmospheric pressure** 6 - low atmospheric pressure The combination grouping all the correct answers is:

Question: Torque can be determined by measuring the:

A. phase difference between 2 impulse tachometers attached to a transmission shaft.
B. quantity of light passing through a rack-wheel attached to a transmission shaft.
C. oil pressure at the fixed crown of an epicycliodal reducer of the main engine gearbox
D. frquency of an impulse tachometer attached to a transmission shaft.

Question: One of the disadvantages of an electronic tachometer is the:

A. high influence of line resistance on the indication.
B. influence of temperature on the indication.
C. generation of spurious signals at the commutator.
D. necessity of a power supply.

Question: A synchroscope is used on aircraft to:

A. **set several engines to the same speed.** It allows you to synchronise the rpm of all the engines.
B. reduce the rpm of each engine.
C. achieve optimum control of on-board voltages.
D. reduce the vibration of each engine.

Question: A magnetic tachometer consists of:

A. a single-phase generator connected to a synchronous motor.
B. a three phase generator connected to a synchronous motor.
C. a single-phase generator connected to a asynchronous motor.
D. a permanent magnet turning inside a non magnetic drag cup.

Question: A three-phase electrical tachometer utilises a generator feeding:

A. directly a voltmeter.
B. directly a drag cup.
C. a synchronous motor turning a drag cup.
D. directly a galvanometer.

Question: The RPM indicator (or tachometer) of a piston engine can include a small red arc within the arc normally used (green arc) In the RPM range corresponding to this small red arc the:

A. propeller efficiency is minimum at this rating
B. **propeller generates vibration, continuous rating is forbidden** Green = OK, red = don't go there !
C. rating is the maximum possible in continuous mode
D. rating is the minimum usable in cruise

Question: The signal supplied by a transmitter fitted with a 3-phase AC generator, connected to RPM indicator, is:

A. an AC voltage varying with the RPM; the indicator rectifies the signal via a diode bridge and is provided with a voltmeter
B. a three-phase voltage, the frequency of which varies with the RPM; the indicator is provided with a motor which drives a magnetic tachometer
C. an AC voltage, the frequency of which varies with the RPM; the indicator converts the signal into square pulses which are then counted
D. a DC voltage varying with the RPM; the indicator is a plain voltmeter with a rev/min. scale

Question: The signal supplied by a transmitter fitted with a magnetic sensor, connected to an RPM indicator is:

A. a three-phase voltage, the frequency of which varies with the RPM; the indicator is provided with a motor which drives a magnetic tachometer
B. an AC voltage varying with the RPM ; the indicator rectifies the signal via a diode bridge and is provided with a voltmeter
C. a DC voltage varying with the RPM ; the indicator is a simple voltmeter with a rev/min. scale
D. an AC voltage, the frequency of which varies with the RPM; the indicator converts the signal into square pulses which are then counted

This question refers to the induction or the phonic wheel tachometer.Note that answer "an AC voltage varying with the RPM ; the indicator rectifies the signal via a diode bridge and is provided with a voltmeter" is also correct, appeal this question if it comes up in your JAA exams.

Question: The transmitter of RPM indicator may consist of **: 1- a magnetic sensor supplying an induced AC voltage 2- a DC generator supplying a DC voltage 3- a single-phase AC generator supplying an AC voltage 4- a three-phase AC generator supplying a three-phase voltage** The combination of correct statements is :

Question: In a 3-phase synchronous motor type tachometer indicator **: 1- the transmitter is a direct current generator** 2- the voltage is proportional to the transmitter drive speed 3- the frequency is proportional to the transmitter drive speed 4- the speed indicating element is a galvanometer **5. the speed indicating element is an asynchronous motor driving a magnetic tachometer** The combination regrouping all the correct statements is:

Question: The advantages of an electrical induction tachometer are: **1- the display is not sensitive to line resistance 2- the measurement is independent of aircraft power supply** 3- the measurement is independent of temperature variations **4- the option to use without restriction several indicators connected in parallel to a single transmitter** The combination regrouping all the correct statements is:

Question: The advantages of a D.C. generator tachometer are: **1- easy transmission of the information. 2- independence of the information relative to the airborne electrical power supply**. 3- freedom from any spurious current due to the commutator. The combination regrouping all the correct statements is:

Question: The advantages of single-phase A.C. generator tachometer are: **1- the suppression of spurious signals due to a D.C. generator commutator** 2- the importance of line resistance on the information value **3- the independence of the information in relation to the airborne electrical power supply** 4- the ease of transmission of the information The combination regrouping all the correct statements is:

Question: The disadvantages of a single-phase A.C. generator tachometer are: 1- the presence of spurious signals due to a D.C. generator commutator **2- the importance of line resistance on the information value** 3- the influence of temperature on the tachometer information The combination regrouping all the correct statements is:

Question: The properties of a single-phase electrical tachometer are**: 1 - indication depending on the line resistance. 2 - independance from the aircraft airborne power supply. 3 - simple design** The combination that regroups all of the correct statements is:

A single-phase electrical tachometer has all these properties.

Question: Any vibration displayed on an engine vibration monitoring system for a turbojet:

A. indicates rotor imbalance.
B. varies inversely as the square of the engine speed.
C. is presented without any amplification or filtering.
D. is directly proportional to engine speed.

Question: The output from an engine vibration transducer is:

A. fed directly to the indicator in the cockpit without amplification or filtering.
B. directly proportional to engine speed.
C. always filtered to remove unwanted frequencies.
D. inversely proportional to engine speed.

We know the frequencies which are damaging but we need to be made aware of the amplitude of these frequencies. Unwanted frequencies are filtered out.

Question: In an engine vibration monitoring system for a turbojet any vibration produced by the engine is:

A. inversely proportional to engine speed.
B. directly proportional to engine speed.
C. fed directly to the cockpit indicator without amplification or filtering.
D. amplified and filtered before being fed to the cockpit indicator.

Amplified to give a better indication but certain frequencies are filtered out to ensure that the 'problem' frequencies are better detected.

Question: A vibration indicator receives a signal from different sensors (accelerometers). It indicates the:

A. acceleration measured by the sensors, expressed in g
B. vibration frequency expressed in Hz
C. vibration period expressed in seconds
D. vibration amplitude at a given frequency

Question: The alternate static source of a light non-pressurized aeroplane is located in the flight deck; when used:

A. it has no influence on airspeed indicator reading.
B. the airspeed indicator tends to over-read.
C. the airspeed indicator tends to under-read.
D. the airspeed indicator indicates a consistent decreasing speed.

Pressure inside an unpressurised aircraft tends to be lower than pressure outside. A lower than true static pressure fed to the ASI causes it to over read.

Question: The alternate static source of a light non-pressurized aeroplane is located in the flight deck; when used, the altimeter:

A. tends to over-read.
B. is blocked.
C. indicates zero.
D. tends to under-read.

Pressure inside an unpressurised aircraft tends to be lower than pressure outside. A lower than true static pressure fed to the altimeter causes it to over read.

Question: In case of static blockage, the airspeed indicator:

A. under-reads in descent only.
B. over-reads in climb and under-reads in descent.
C. over-reads in climb only.
D. under-reads in climb and over-reads in descent.

For blockages remember **SOD SUC**:
Static blocked, **O**ver reads in **D**escent.
Static blocked **U**nder reads in **C**limb.

With the pitot blocked the pressure in the capsule (D + S) is fixed. In the descent the static in the case increases which compresses the capsule causing the reading to decrease and in the climb the static in the case decreases which allows the capsule to expand causing the instrument the over read.
PUD = **P**itot blocked, **U**nder reads in **D**escent.
POC = Pitot blocked, **O**ver reads in **C**limb.

Question: Assuming that the CAS remains constant, if the total pressure probe is blocked, the IAS:

A. remains constant during all the phases of the flight.
B. remains constant during level flight, decreases during a climb and increases during a descent.
C. remains constant during level flight, increases during a climb and decreases during a descent.
D. increases during level flight, remains constant during a climb and a descent.

Question: If the pitot tube becomes blocked during a descent, the airspeed indicator:

A. under-reads.
B. indicates a constant speed.
C. over-reads.
D. under-reads or over-reads, depending on the air density.

Pressure in capsule fixed (by blockage); pressure in case increases in descent; capsule compresses; readings decrease (PUD).

Question: The alternate static source of a light non-pressurized aircraft is located in the flight deck; as the alternate static source is opened, the vertical airspeed indicator may:

A. be blocked.
B. indicate a high rate of descent.
C. indicate a slight momentary descent.
D. indicate a momentary climb.

Question: The open-ended tube parallel to the longitudinal axis of the aircraft senses the:

A. static pressure.
B. total pressure. A strange (but accurate) description of the pitot tube which measures total pressure = dynamic + static.
C. dynamic pressure.
D. total pressure plus static pressure.

Question: During a final approach, the flight director system is engaged in the LOC mode (holding of Localizer axis). The position of the vertical command bar indicates:

A. the instantaneous deviation between the aircraft position and the Localizer axis.
B. the position of the aircraft relative to the Localizer axis.
C. the roll attitude of the aircraft.
D. the correction on the bank to be applied to join and follow the Localizer axis.

Question: During a final approach, if the flight director system is engaged in the G/S mode (holding of ILS Glide Slope), the position of the horizontal command bar indicates:

1. the correction on the pitch to be applied to join and follow the ILS Glide Slope.

The flight director bars indicate how much pitch to apply to regain or maintain the glide slope.

Question: Flying manually during a final approach, the flight director system is engaged in the G/S mode (holding of ILS Glide Slope). If the aircraft is below the ILS Glide Slope, the horizontal command bar:

A. deviates downward, whatever the attitude of the aircraft is.
B. deviates upward, whatever the attitude of the aircraft is.
C. may be centred if the pilot is correcting to come back on the ILS Glide Slope.
D. is automatically centred since the G/S mode is engaged.

Question: Flying manually during a final approach, the flight director system is engaged in the G/S mode (holding of ILS Glide Slope). If the aircraft is above the ILS Glide Slope, the horizontal command bar:

A. may be centred if the pilot is correcting to come back on to the ILS Glide Slope.
B. is automatically centred since the G/S mode is engaged.
C. will be centred only when establish on the ILS Glide Slope.
D. cannot be centred.

Question: During a final approach, the flight director system is engaged in the G/S mode (holding of ILS Glide Slope). The position of the horizontal command bar indicates: 1 - the position of the aircraft relative to the ILS Glide Slope **2 - the correction on the pitch to be applied to join and follow the ILS Glide Slope** 3 - the pitch attitude of the aircraft The combination regrouping all the correct statements is:

Question: During a final approach, the flight director is engaged in the G/S mode (holding of ILS Glide Slope). If the horizontal command bar is deviating upward, it means that:

A. the aircraft is below the glide slope.
B. the aircraft is above the glide slope.

C. the pitch attitude must be increased.
D. the pitch attitude must be reduced.

Question: Flight Director Information supplied by an FD computer is presented in the form of command bars on the following instrument:

A. HSI Horizontal Situation Indicator.
B. ADI Attitude Director Indicator.
C. RMI Radio Magnetic Indicator.
D. BDHI Bearing Distance Heading Indicator.

Question: If the pitot tube ices up during a flight, the affected equipment(s) is (are): 1 - the altimeter 2 - the variometer 3 **- the airspeed indicator** The combination regrouping all the correct statements is:

For a start 'variometer' is French for VSI ! The altimeter and VSI only need static pressure.

If the static is blocked the pressure to the altimeter and vertical speed indicator willbe constant in the decent and the instruments will read constant altitude and zero rate of descent. If the static pressure to the case of the ASI is fixed the static element of pitot (total) pressure will increase in the descent causing the capsule to expand and readings to increase. SOD = Static blocked, Over reads in Descent.

Question: If, during a descent: - the pneumatic altimeter reading is constant - the vertical speed indicator shows zero - the IAS is increasing the most likely explanation is that:

A. the antenna of the radio altimeter is completely iced up.
B. there is a leakage in the static pressure line.
C. **the static ports are completely blocked**.
D. the total pressure head is completely blocked

Question: A dynamic pressure measurement circuit is constituted of the following pressure probes:

total pressure and static pressure. Dynamic = Pitot (Total) – Static.

Question: The pressure capsule of an airspeed indicator is sensitive to the difference:

(Total Pressure - Static Pressure), called Dynamic Pressure.

I. **Pressure, or position, error is caused by the incorrect sensing of static pressure.**
II. **Hysterisis error = irregular expansion/contraction of aneroid capsule,**
III. **instrument error = imperfections of manufacture,**
IV. **barometric error = relating altitude to the wrong barometric datum.**

Question: The error induced by the location of the static pressure source is known as the:

Question: The error in altimeter readings caused by the variation of the static pressure near the source is known as:

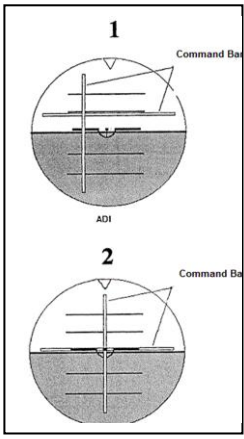
A. 1.barometric error.
B. 2.hysteresis effect.
C. 3.position error.
D. 4.instrument error.

Question: An aircraft is equipped with one altimeter that is compensated for position error and another one altimeter that is not. Assuming all other factors are equal, during a straight symmetrical flight:

A. the greater the speed, the greater the error between the two altimeters.
B. the lower the speed, the greater the error between the two altimeters.

C. the error between the two altimeters does not depend on the speed.
D. the greater the speed, the lower the error between the two altimeters.

Question: After having programmed your flight director, you see that the indications of your ADI (Attitude Director Indicator) are as represented in diagram N°1 of the appended annex. On this instrument, the command bars indicate that you must bank your airplane to the left and :



A. increase the flight attitude until the command bars recentre on <u>the symbolic airplane.</u>
B. increase the flight attitude until the command bars recentre on the horizon.
C. decrease the flight attitude until the command bars recentre on the horizon.
D. decrease the flight attitude until the command bars recentre on the symbolic airplane.

<u>Pitch up to centralise the command bars on the symbolic aircraft</u>

A. bank your aircraft to the right and reduce the pitch angle.
B. bank your aircraft to the left and reduce the pitch angle.
C. bank your aircraft to the right and increase the pitch angle.
D. bank your aircraft to the left and increase the pitch angle.

Question: Concerning the command bars of a flight director:

A. autopilot must be first engaged before removing them.
B. it is not possible to remove them on some types of flight director systems.
C. it is possible to remove them by switching the flight director OFF.
D. autopilot must be first disengaged to remove them.

Question: The flight director computer continuously:

A. compares the current attitude with the computed attitude.
B. computes the required attitude for the autopilot synchronization.
C. compares the computed attitude with the ACAS signals.
D. compares the computed attitude with the EGPWS signals.

Question: Considering a flight director of the "command bars" type: **1 - the vertical bar is always associated with the roll channel** 2 - the vertical bar may be associated with the pitch channel 3 - the horizontal bar may be associated with the roll channel **4 - the horizontal bar is always associated with the pitch channel** The combination regrouping all the correct statements is:

Question: The purpose(s) of the flight director system is (are) to: 1 - give the position of the aircraft according to radioelectric axis. 2 - give the position of the aircraft according to waypoints. **3 - to aid the pilot when flying manually** The combination that regroups all of the correct statements is::

Question: The essential components of a flight director are: **1- a computer** 2- an automatic pilot 3- an auto-throttle **4- command bars** The combination regrouping all the correct statements is:

Question: The command bars of a flight director:

A. are displayed only when flying manually.
B. may be displayed when flying manually or with the autopilot engaged.
C. are always displayed during take-off.
D. are displayed only when the autopilot is engaged.

Question: The output data of the flight director computer are:

A. two channels: pitch and roll.
B. three channels: pitch, roll and yaw.
C. three channels: pitch, roll and sideslipping.
D. two channels: pitch and yaw.

Question: Command bars of the flight director may be present on the: 1 - HSI 2 - CDU **3 - ADI** The combination that regroups all of the correct statements is:

Question: Considering a flight director of the "command bars" type:

A. the vertical bar is associated with the pitch channel.
B. the horizontal bar may be associated with the roll channel.
C. the vertical bar is associated with the roll channel.
D. the horizontal bar is associated with the roll channel.

Question: The flight director provides information for the pilot:

A. to join a desired track with a constant bank angle of 25°.
B. to join a desired track with a 45° intercept angle.
C. to remain within the flight envelope.
D. to join to a desired path with the optimum attitude.

Question: The position of the command bars of a flight director enables the pilot to know: **1 - the direction and the amplitude of the corrections to apply on the controls.** 2 - only the direction of the corrections to apply on the controls. 3 - the attitude of the aircraft. The combination that regroups all of the correct statements is:

Question: The horizontal command bar of a flight director:

A. repeats the position information given by the ILS in the horizontal plane.
B. gives information about the direction and the amplitude of the corrections to be applied on the pitch of the aircraft.
C. gives information only about the direction of the corrections to be applied on the pitch of the aircraft.
D. repeats the position information given by the ILS in the vertical plane.

Question: The vertical command bar of a flight director:

A. gives information about the direction and the amplitude of the corrections to be applied on the bank of the aircraft.
B. repeats the position information given by the VOR.
C. gives information only about the direction of the corrections to be applied on the bank of the aircraft.
D. repeats the position information given by the EHSI.

Question: The purpose of a flight director is to:

A. provide an automatic landing system function.
B. automatically steer the aircraft to waypoints selected on the CDU.
C. reduce the pilots workload by presenting data in the form of control commands.
D. convey air traffic control information to the pilot.

Question: The horizontal command bar of a flight director: 1 - repeats the position information given by the ILS in the horizontal plane 2 - repeats the position information given by the ILS in the vertical plane **3 - gives information about the direction and the amplitude of the corrections to be applied on the pitch of the aircraft.** The combination regrouping all the correct statements is:

Question: The vertical command bar of a flight director: 1 - repeats the position information given by the EHSI 2 - repeats the position information given by the **VOR 3 - gives information about the direction and the amplitude of the corrections to be applied on the bank of the aircraft** The combination regrouping all the correct statements is:

Question: The position of a Flight Director command bars:

A. repeats the ADI and HSI information
B. enables the measurement of deviation from a given position.
C. only displays information relating to radio-electric deviation.
D. indicates the manoeuvres to execute, to achieve or maintain a flight situation.

Question: The flight director indicates the:

A. path permitting reaching a selected radial over a minimum distance.
B. path permitting reaching a selected radial in minimum time.
C. optimum <u>instantaneous</u> path to reach selected radial.
D. optimum path at the moment it is entered to reach a selected radial.

Question: On a modern aircraft, the flight director modes are displayed on the:

A. upper strip of the ND (Navigation Display).
B. upper strip of the PFD (Primary Flight Display).
C. control panel of the flight director only.
D. upper strip of the ECAM (Electronic Centralized A/C Management).

Question: Considering a flight director of the command bars type:

A. the horizontal bar is associated with the pitch channel.
B. the vertical bar may be associated with the pitch channel.
C. the horizontal bar is associated with the roll channel.
D. the vertical bar is associated with the pitch channel.

Question: The command bars of a flight director:

A. are displayed only if the autopilot is engaged.
B. **may be displayed when flying manually**.
C. are always displayed during take-off.
D. are always displayed when the autopilot is engaged.

Question: Mode "Localizer ARM" active on Flight Director means:

A. Localizer ALARM, making localizer approach not authorized
B. Localizer is armed and coupling will occur when flag warning disappears
C. Coupling has occurred and system provides control data to capture the centreline
D. System is armed for localizer approach and coupling will occur upon capturing centre line

Question: The alternate static source of a light non-pressurized aircraft is located in the flight deck; when used: 1 - the airspeed indicator tends to under-read **2 - the airspeed indicator tends to over-read** 3 - the altimeter tends to under-read **4 - the altimeter tends to over-read** The combination that regroups all of the correct statements is:

Question: Given: - Ts the static temperature (SAT) - Tt the total temperature (TAT) - Kr the recovery coefficient - M the Mach number The total temperature can be expressed approximately by the formula:

$Tt = Ts(1+0.2\ M^2)$ <u>The question asks how the temperature can be expressed approximately:</u>

<u>since $Ts = Tt/(1 + 0.2M^2)$ is an approximation and $Ts = Tt/(1 + 0.2KrM^2)$ gives a precise value we go with: $Tt = Ts(1 + 0.2M^2)$.</u>

Question: Given: Mach number M = 0.70 measured impact temperature = - 48 °C the recovery factor (Kr) of the temperature probe = 0.85 The OAT is:

a. 45 °C
b. 51 °C
c. 68 °C
d. 65 °C

TAT = SAT (1 +0,2 KRM ^ 2)
Böylece Kelvin sıcaklıklarını koymayı unutmayın ...
273-48=225
225 = SAT x (1 + (0.2 x 0.85 x 0.7 x 0.7))
Bu nedenle
= 225 / 1,0833 = 207.7 Kelvin= -65 ^{o} C

Question: An outer loop Automatic Flight Control System (AFCS), is a system which:

1. **contains a parallel actuator which provides control through 100% of the control range and moves both the control inputs and the cockpit control stick.**

Question: The block diagram of an auto-pilot is shown in the annex. For each control channel (pitch, roll and yaw) the piloting law is the relationship between the deflection of the control surface commanded by the computer (BETA c) and the:

A. aircraft response S.
B. pilot command E.
C. offset EPSILON at the computer input.
D. real deflection of the control surface (BETA control surface feedback).

Question: The CS 25 gives the following definition: "Where the pilot has the ability to make inputs to the automatic pilot by movement of the normal control wheel". The corresponding mode is:

A. nose wheel steering (NWS).
B. alternate wheel steering (AWS).
C. automatic wheel steering (AWS).
D. control wheel steering (CWS).

Question: According to CS25, the definition of the control wheel steering mode (CWS) is: "Where the pilot has the ability to make inputs to the:

A. flight director by movement of the alternate control wheel".
B. flight director by movement of the normal control wheel".
C. automatic pilot by movement of the normal control wheel".
D. automatic pilot by movement of the alternate control wheel".

Question: The purpose of the autopilot Control Wheel Steering (CWS) mode is:

1. **to consider as target parameters, the current pitch and roll angles at the time the mode becomes active.**
2. to control the nose wheel steering during low visibility take off and landing.
3. to capture and hold the altitude selected with the control wheel on the mode control panel.
4. to control the nose wheel steering during automatic landing.

Question: A pilot engages the control wheel steering (CWS) of a conventional autopilot and carries out a manoeuvre in roll. When the control wheel is released, the autopilot will:

A. restore the flight attitude and the rate of turn selected on the autopilot control display unit.
B. maintain the track and the flight attitude obtained at that moment.
C. maintain the flight attitude obtained at that moment.
D. roll wings level and maintain the heading obtained at that moment.

Question: The basic modes of an autopilot consist in:

A. controlling the movement of the centre of gravity of the aircraft.
B. controlling the path of the aircraft vertically only.
C. controlling the path of the aircraft horizontally or vertically.
D. stabilizing the aircraft around its centre of gravity.

Question: When engaged in the pitch hold mode, the autopilot uses data issued by the:

A. ADC.
B. Flight Management Computer (FMC).
C. Inertial Vertical Speed Indicator.
D. attitude reference system.

Question: The basic modes of an autopilot consist in:

A. controlling the movement of the centre of gravity of the aircraft.
B. controlling the path of the aircraft vertically only.
C. controlling the path of the aircraft horizontally or vertically.
D. stabilizing the aircraft around its centre of gravity.

Question: The control law of a transport airplane autopilot control channel may be defined as the relationship between the :

A. computer input deviation data and the output control deflection signals.
B. input and output signals at the amplifier level respectively control deviation data and control deflection signals.
C. computer input deviation data and the signals received by the servo actuators.
D. crew inputs to the computer and the detector responses (returned to the airplane).

Question: The computer of the autopilot system uses, among others, the following parameters:

A. CAS, altitude, vertical speed, heading, attitude.
B. CAS, altitude, temperature, inertial position, attitude.
C. altitude, heading, temperature, fuel flow, attitude.
D. altitude, vertical speed, heading, attitude, GPS position.

Question: During an autocoupled ILS approach followed by an automatic landing, the guidance signals in the vertical plane under 200 ft are computed according to the:

A. barometric altitude with the altimeter set to the QNH.
B. barometric altitude with the altimeter set to the 1013,25.
C. radio altitude.
D. barometric altitude with the altimeter set to the QFE.

Question: The lateral flight path modes of an autopilot system are: 1 - Speed **hold 2 - Localiser intercept and track 3 - Track hold 4 - FMS lateral navigation** 5 - Pitch attitude hold The combination that regroups all of the correct statements is:

Question: The "guidance" functions of a autopilot consist in:

A. stabilizing and monitoring the movements around the aerodynamic centre.
B. monitoring the movements of the aerodynamic centre in the three dimensions of space.
C. stabilizing and monitoring the movements around the centre of gravity.
D. monitoring the movements of the centre of gravity in the three dimensions of space.

The autopilot can perform two functions; the basic function is stabilisation but it can also be used for guidance. Stabilisation is the control of the aircraft around its CofG and guidance is monitoring the movement of the CofG in space ('navigation').

Question: A temperature sensor has a recovery factor of 0,95. The temperature measured is equal to:

A. ram air temperature (RAT) + 95 % of the ram rise.
B. 95 % of the ram air temperature (RAT).
C. static air temperature (SAT) + 95% of the ram rise.
D. 95 % of the static air temperature (SAT).

Question: Automatic Flight Control System (AFCS) series actuator is:

A. passed to the pilot via control stick position.
B. displayed in the cockpit as a function of input and output signals.
C. not displayed in the cockpit due to short duration of operation.
D. displayed to the pilot by movement on the ADI/EADI.

Actuators are the devices that move the control surfaces on an aircraft; they are installed into the overall control circuit in one of two ways - either connected in parallel or in series. When connected in parallel they allow the control column to follow the movement of the control surface (ie if you bank to starboard the control column will reflect that).

Question: Among the following functions of an autopilot, those related to the airplane guidance are: 1- pitch attitude holding 2- horizontal wing holding **3- indicated airspeed or Mach number holding 4- altitude holding 5- VOR axis holding** 6- yaw damping The combination regrouping all the correct statements is: **VOR :** VHF Omnidirectional beacon

Question: Among the following functions of an autopilot, those related to the aeroplane stabilization are: **1 - pitch attitude holding** 2 - IAS or Mach number holding **3 - horizontal wing holding** 4 - VOR radial holding The combination that regroups all of the correct statements is:

Question: The FMS provides the following functions: **1- vertical flight plan management 2- fuel management 3- lateral flight plan management** 4- terrain awareness and warning The combination which regroups all of the correct statements is:

Question: The sequence of the automatic landing comprises several phases (from final approach to touch-down) actuated by:

A. the DME (Distance Measuring Equipment) of the ILS (Instrument Landing System).
B. the altimeter set to the QNH.
C. the distance left before the touch down zone.
D. the radio altimeter.

Question: The radio altimeter: 1 - operates in the 1600-1660 kHz range **2 - operates in the 4200-4400 MHz range 3 - measures a frequency difference** 4 - measures an amplitude difference The combination regrouping all the correct statements is:

Question: The aircraft radio equipment which emits on a frequency of 4400 MHz is the:

A. radio altimeter.
B. weather radar.
C. primary radar.
D. high altitude radio altimeter.

Question: During the approach, the radio altimeter indicates 950 ft. This is:

A. the relative height of the aircraft with regard to the runway.
B. the height of the lowest wheels with regard to the ground.
C. the height of the pilot eyes with regard to the ground.
D. the relative height of the aircrfat above airport level (AAL).

Radio altimeter gives the height of the lowest wheels above the ground immediately below the aircraft.

Question: A radio altimeter can be defined as a:

A. ground radio aid used to measure the true altitude of the aircraft

B. ground radio aid used to measure the true height of the aircraft
C. self-contained on-board aid used to measure the true altitude of the aircraft
D. self-contained on-board aid used to measure the true height of the aircraft

Question: The radio altimeter is required to indicate zero height AGL as the main wheels touch down on the runway. For this reason, it is necessary to:

A. have a specific radio altimeter dedicated to automatic landing.
B. compensate for residual height and cable length.
C. change the display scale in short final, in order to have a precise readou
D. adjust the gross height according to the aircraft instantaneous pitch.

The system compensates for the time it takes for the signal to travel from the aerial (allowing for lowest main wheel – 'residual height') and along the cable to the processor.

Question: A radio altimeter uses:

A. two antennas: one for the transmission and an other for the reception.
B. four antennas: two for the transmission and two for the reception.
C. a single antenna for simultaneous transmission and reception.
D. two antennas: both of them for simultaneous transmission and reception.

Question: The radio altimeter supplies data to the following system(s): 1 - altitude alert system **2 - TCAS 3 - GPWS 4 - automatic landing system** The combination that regroups all the correct statements is:

Question: The range of a low altitude radio altimeter is:

A. greater than 10 000 ft.
B. 10 000 ft.
C. 2 500 ft.
D. 500 ft.

Question: During a category III automatic approach, the position signals in the vertical plane under 200 ft are based on:

A. an altimeter set to 1013 hPa.
B. an altimeter set to the QNH.
C. a radio altimeter. Rad alt. For Cat. II & III.
D. an altimeter set to the QFE.

The radio alt is NOT a pulse system, it is a frequency modulated continuous wave equipment.The principle of operation is that, at any given moment in time, the transmitted frequency is compared to the incoming frequency and the difference between the two is calculated.Knowing the rate at which the outgoing frequency is changing it is possible therefore to calculate the time lapse between the 2 signals and also, ultimately, the height of the aircraft.

Question: The data supplied by a radio altimeter:

A. is used only by the radio altimeter indicator.
B. concerns only the decision height.
C. is used by the automatic pilot in the altitude hold mode.
D. indicates the distance between the ground and the aircraft.

Question: In a radio altimeter, the height measurement is based upon:

A. a wave transmission, for which the frequency shift by DOPPLER effect after ground reflection is measured.
B. a frequency modulation wave, for which the frequency variation between the transmitted wave and the received wave after ground reflection is measured.
C. a triangular amplitude modulation wave, for which modulation phase shift between transmitted and received waves after ground reflection is measured.
D. a pulse transmission, for which time between transmission and reception is measured on a circular scanning screen.

Question: The signal transmitted by a radio altimeter is:

A. a combination of frequency modulation and pulse modulation.
B. an amplitude modulated carrier wave.
C. a frequency modulated carrier wave.
D. a pulse modulated carrier wave.

Question: An automatic ILS approach can be flown only:

A. within a range of crosswinds and levels of turbulence.
B. within a range of crosswinds and no limit for turbulence.
C. without limits for crosswind or turbulence.
D. within a range of levels of turbulence and no limit for crosswinds.

Question: If, with the automatic flight control system (AFCS) engaged, the pilot presses the force trim release button to allow a manual input to the flight controls:

A. the pilot must overcome the force of the spring unit to make the input.
B. artificial feel is produced by the parallel actuators.
C. the series actuator will run to damp the pilot's input.
D. the spring units will become ineffective.

Question: The automatic synchronisation function of an autopilot control system: 1 - operates only when the autopilot is engaged 2 - prevents the aircraft's control system from jerking when disengaging the autopilot **3 - prevents the aircraft's control system from jerking when engaging the autopilot** The combination regrouping all the correct statements is:

Question: The Static Air temperature (SAT) is:

A. the temperature resulting from the aircraft motion in the air.
B. the outside air temperature measured by the pitot probe.
C. the TAT divided by the recovery factor.
D. the ambiant outside air temperature SAT (COAT) = TAT (IOAT) - Ram Rise**.**

Question: The altimeter is subject to static pressure error. This error results from:

A. imperfect elasticity of the aneroid capsules.
B. cabin pressure slightly lower than outside air pressure due to airflow over the fuselage.
C. incorrect pressure sensing caused by disturbed airflow around the static ports.
D. frictions inside the instrument.

Question: Concerning the pitot and static system, the static pressure error:

A. is a direct effect of heating of the static ports.
B. is a direct effect of a blockage of the static port.
c. **is caused by disturbed airflow around the static ports.** This is an error in the measurement of static pressure.
D. affects the alternate static port only.

Question: The yaw damper system sends a motion order to the rudder if the yawing rate of the aircraft:

A. is > 1 only.
B. is > 0 only.
C. is constant.
D. is not constant. The yaw about the normal axis of 2-3 hz is not constant.

Question: The yaw damper system is operative:

A. only when flying manually.
B. during manual or automatic flight.
C. only if the flight director is engaged.
D. only if the autopilot is engaged.

Question: The altimeter is subject to static pressure error. This error varies according to:

A. TAS and OAT.
B. TAS and altimeter setting.
C. angle of attack and OAT.
D. TAS and angle of attack. Pressure error varies with TAS (more precisely with Mach No.) and angle of attack.

Question: Concerning the pitot and static system, the static pressure error varies according to: 1 - altimeter setting **2 - speed 3 - angle of attack** The combination that regroups all of the correct statements is: Altimeter setting is irrelevant to the pressure sensed at the static port.

Question: The altimeter of your aircraft indicates 10000 ft with a subscale-setting of 1013,25 mb. OAT is +5°C. The pressure altitude of the aircraft is:

1. **10000 ft.** **Pressure altitude is the figure shown on your altimeter with 1013(.25) set. The rest is a smokescreen.**

Question: The altimeter indicates true altitude:

1. when pressure at mean sea level is 10135,25 hPa, with a ground temperature of 15°C and a density equal to 1,225 kg/m3.

2. **in standard atmosphere only.**

Question: Given: Pt: total pressure Ps: static pressure Pd: dynamic pressure The altimeter is fed by:

1. **Pt-Pd.** ASI is 'fed with' Dynamic (Total) = Pitot – Static.

Question: An altimeter contains one or more aneroid capsules. Inside these capsules is:

A. a very low residual pressure and outside is static pressure. There is a partial vacuum in the capsule and static pressure is fed to the case.
B. static pressure and outside a very low residual pressure.
C. dynamic pressure and outside is static pressure.
D. static pressure and outside is dynamic pressure.

Question: An airspeed indicator includes a capsule; inside this capsule is:

A. static pressure and outside is dynamic pressure.
B. a very low residual pressure and outside is static pressure
C. total pressure and outside is static pressure.
D. dynamic pressure and outside is static pressure.

Total (pitot) pressure (dynamic + static) is fed to the capsule and static pressure is fed to the case. The expansion of the capsule is proportional to dynamic pressure.

Question: The QNH is by definition the value of the:

A. altimeter setting so that the needles of the altimeter indicate the altitude of the location for which it is given. **QFE reduced to sea level at the ISA lapse rate.**
B. atmospheric pressure at the level of the ground overflown by the aircraft.
C. atmospheric pressure at the sea level of the location for which it is given.

D. altimeter setting so that the needles of the altimeter indicate zero when the aircraft is on ground at the location for which it is provided.

Question: A servo-assisted altimeter is more accurate than a simple altimeter because the small movements of:

A. the capsules are not taken into account.
B. the capsules are detected by a very sensitive electro-magnetic pick-off.
C. the pointers are detected by a very sensitive electro-magnetic pick-off.
D. the capsules are inhibited.

Question: The purpose of the vibrating device of an altimeter is to:

A. **reduce the effect of friction in the linkages.** The vibrator overcomes linkage friction, it does not warn of failures or damp the output. Hysteresis is the irregular response of the capsule to pressure changes.
B. allow damping of the measurement in the unit.
C. reduce the pressure error.
D. inform the crew of a failure of the instrument.

Question: The atmospheric pressure at FL 70 in a "standard +10" atmosphere is:

1. 1013.25 hPa.
2. 942.13 hPa.
3. 644.41 hPa.
4. **791.3 hPa.**

If we take a ball-park 30 feet per hPa then from msl to FL70 = (7,000/30) = 233.3hPa.

Pressure at msl in ISA = 1013.25hPa so at FL70 it will be approximately 1013.25 - 233.3 = 779.95hPa; so look for an answer close to 780hPa.

Question: In case of accidental closing of an aircraft's left static pressure port (rain, birds), the altimeter:

1. overreads the altitude in case of a side-slip to the right and displays the correct information during symmetric flight.
2. underreads the altitude.
3. keeps on providing reliable reading in all situations
4. **overreads the altitude in case of a sideslip to the left and displays the correct information during symmetric flight.**

With side slip to the left pressure will increase on the left (port) side of the aircraft and decrease on the right (starboard) side of the aircraft. With both static ports open this would be more or less compensated and this is why two static ports are used.

Question: Due to its conception, the altimeter measures a:

A. temperature altitude
B. true altitude
C. density altitude
D. pressure altitude

Question: When climbing at a constant CAS:

A. EAS increases.

B. **EAS decreases.** Compressibility causes the ASI to over read. EAS is CAS corrected for compressibility so CAS will always be higher than EAS. At low speeds (i.e. below TAS 300kts) the difference between EAS and CAS is so small that we can ignore it but it is still there. If you climb at constant EAS then CAS will increase (as TAS and, therefore, compressibility increases). If you climb at constant CAS then EAS must decrease for the same reason.

Question: If the static ports are completely clogged up by ice during a climb, the vertical speed indicator shows**: ZERO**

With the static vent blocked there will be no change of pressure in the static system which means that no climb or descent will be indicated.

Question: The response time of a vertical speed detector may be increased by adding a:

A. bimettalic strip
B. return spring
C. second calibrated port
D. **correction based on an accelerometer sensor.** The accelerometer (dash pots) responds to 'G' forces in the climb and descent.

Question: On the airspeed indicator of a twin-engine aeroplane, the blue radial line corresponds to the:

A. minimum ground control speed.
B. single-engine holding speed.
C. **best single-engine rate of climb.** Optimum single-engine rate of climb speed (VYSE).
D. minimum air control speed.

Question: The compressibility error must be taken into account only for aeroplane with:

A. Mach number greater or equal to 1.
B. **TAS greater than approximately 200 kt.** Compressibility becomes noticeable at speeds above 300kts (556km/hr). Best answer.
C. Mach number greater than 0,8.
D. TAS greater than approximately 100 km/h.

1. **Question:** Speed of sound is proportional to: **the square root of the absolute temperature.** LSS = 38.94 x √T˚A.

Question: During a climb at a constant CAS below the tropopause in standard atmosphere:

A. the Mach number and the speed of sound increase.
B. the Mach number and the speed of sound decrease.
C. the Mach number decreases and the speed of sound increases.
D. **the Mach number increases and the speed of sound decreases.**

*If we have normal conditions; temperature decreasing as we climb in the troposphere.

CAS is a measure of dynamic pressure = $\frac{1}{2}\rho V^2$

Where ρ = air density (decreasing in climb) and V = TAS (increasing to keep CAS constant)
LSS is decreasing as temperature decreases.
MN = TAS/LSS = Increasing/Decreasing = Increasing

Question: If the outside temperature at 35 000 feet is -40°C, the local speed of sound is:

A. 686 kt.
B. 247 kt.
C. 596 kt.

Nav. Computer: In AIRSPEED window put temperature (-40ºC) next to MACH INDEX.
Go to 10 (Mach 1.0) on the inner main scale and read LSS next to it on outer main scale (595kts).
Calculator: LSS = 38.94√ (273º - 40º) = 594.4kts

D. 307 kt.

Question: The velocity maximum operating (VMO) is a speed expressed in:

A. CAS or EAS.
B. TAS or EAS.
C. TAS only.
D. CAS or TAS.

Our latest feedback - Nov 2011 - shows that the examiner wants to see you marking "CAS or TAS" inspite of "CAS or EAS" being a more accurate answer.

If you see this question in your exams please let us know what answer gets you the point! support@atplonline.co.uk

Question: After an aircraft has passed through a volcanic cloud which has blocked the total pressure probe inlet of the airspeed indicator, the pilot begins a stabilized descent and finds that the indicated airspeed:

A. decreases abruptly towards zero
B. increases abruptly towards VNE
C. increases steadily
D. decreases steadily

Once the pitot has blocked the pressure in the air speed indicator capsule will be fixed.
In the descent the static pressure in the case will increase, the capsule will compress and the readings will steadily decrease.

Question: A blocked pitot head with a clear static source causes the airspeed indicator to:

A. freeze at zero.
B. react like an altimeter.
C. operate normally.
D. read like a vertical speed indicator.

With the pitot blocked the pressure in the capsule is fixed. As the aircraft climbs the static pressure in the case decreases, the capsule expands and the reading on the instrument increases. The reverse will happen in the descent. Just like an altimeter.

Question: A pitot tube covered by ice which blocks the ram air inlet will affect the following instrument (s):

A. airspeed indicator, altimeter and vertical speed indicator.
B. airspeed indicator only. The altimeter and VSI only require static pressure.
C. vertical speed indicator only.
D. altimeter only.

Question: Sound propagates through the air at a speed which only depends on:

A. temperature. The speed of sound through any medium varies with temperature.
B. temperature and the pressure.
C. density.
D. pressure.

Question: The airspeed indicator of a twin-engine aircraft comprises different sectors and colour marks. The blue line corresponds to the:

A. maximum speed in operations, or VMO
B. minimum control speed, or VMC
C. speed not to be exceeded, or VNE
D. optimum climbing speed with one engine inoperative, or Vy

Question: The automatic power control system (autothrottle) of a transport airplane has the following mode(s) : **1- capture and holding of speeds 2- capture and holding of Mach number** 3- capture and holding of flight angle of attack **4- capture and holding of N1 or EPR (Engine Power Ratio)** 5- capture and holding of flight paths The combination regrouping all the correct statements is :

Question: The autothrottle :

1- **enable to catch and to maintain the N1 RPM**
2- enable to catch and to maintain the N2 RPM
3- **enable to catch and to maintain an airplane indicated airspeed (IAS)**
4- is always engaged automatically at the same time as the autopilot The combination regrouping all the correct statements is:

Question: The ADC uses the following parameters as input data:

A. total pressure, static pressure, TAT, EGT.
B. Mach number, baro altitude, CAS.
C. static pressure, total pressure, TAT.
D. TAS, baro altitude, TAT.

Question: For TAS calculations, the ADC uses the following parameters: 1) SAT **2) TAT 3) static pressure 4) total pressure** The combination regrouping all the correct statements is:

Question: An airplane is flying at FL140 with a CAS of 260kt in standard conditions. The Mach number is:

A. 0.43
B. 0.53
C. 0.41
D. 0.51

FL140 = 15-(2X14000/1000) =-13. Find the TAS at 260kts CAS.
Nav computer: Find TAS at 140/-13 CAS 260kt = TAS 322kt
Mach index window -13C. From TAS 322kts read M0.51
Confirm it with the formula: M = TAS/LSS -13C = 260A LSS = 38.94 (sq. root 260) = 628kt
322/628 = M0.51

Question: An aeroplane is flying at FL300 with a TAS of 470kt in standard conditions. The Mach number is:

A. 0.53
B. 0.82
C. 0.83
D. 0.80

FL300 ISA = +15°C – (2° x 30) = -45°C

On Nav computer put MACH No. INDEX in AIRSPEED window next to -45°C, go to TAS 470kts on outer scale and read Mach No. next to it on inner scale = 0.8.

Question: In an Air Data Computer (ADC), aeroplane altitude is calculate from:

A. The difference between absolute and dynamic pressure at the fuselage.
B. Measurement of elapsed time for a radio signal transmitted to the ground surgace and back.
C. Measurement of outside air temperature (OAT).
D. Measurement of barometric pressure from a static source on the fuselage.

Question: The input data of an ADC (Air Data Computer) are: 1 - OAT **2 - TAT 3 - Static Pressure 4 - Total Pressure** The combination that regroups all of the correct statements is:

Question: The magnetic heading can be derived from the true heading by means of a:

A. map showing the isoclinic lines
B. map showing the isogonal lines Isogonals join points of equal magnetic variation.
C. compass swinging curve
D. deviation correction curve

Question: The compass heading can be derived from the magnetic heading by reference to a:

A. magnetic variation correction card
B. map showing the isoclinic lines
C. map showing the isogonic lines

D. **compass deviation card** Deviation is the angle between magnetic North and compass North.

Question: The compass heading can be derived from the magnetic heading by reference to a:

A. deviation correction curve.
B. map showing the isogonic lines.
C. map showing the isoclinic lines.
D. compass swinging curve.

Question: About a magnetic compass (direct reading compass):

A. **turning error is due to the vertical component of the earth's magnetic field**.
B. errors of parallax are due to the oscillation of the compass rose
C. acceleration errors are due to the angle of dip.
D. acceleration errors are due to Schuler oscillations

Question: Magnetic compass calibration is carried out to reduce:

A. variation.
B. acceleration errors.
C. parallax error.
D. **deviation.** The compass swing is carried out to minimise the difference between compass heading and magnetic heading (deviation).

Question: The directive force of the earth's magnetic field:

A. is greatest at the magnetic equator.
B. varies with the heading of the aircraft.
C. increases as magnetic lattitude increases.
D. increases as the magntic variation increases.

Question: The center of gravity of the compass rose of a direct reading magnetic compass lies below the pivot point in order to reduce the influence of the:

A. position error.
B. **magnetic inclination.** The centre of gravity is positioned below the pivot point in order to overcome the effect of the angle of dip.
C. magnetic variation.
D. parallax eror.

Question: The fields affecting a magnetic compass originate from: **1. magnetic masses 2. ferrous metal masses** 3. non ferrous metal masses **4. electrical currents** The combination regrouping all the correct statements is: Non-ferrous metals (i.e. not iron) do not create magnetic fields but the others do.

Question: The FMS cross track (XTK) is:

A. the abeam distance error, to the left or right from the desired flight plan leg to the aircraft position.
B. the distance error between the FMS computed position and the GPS computed position.
C. the distance error between the FMS computed position and the IRS computed position.
D. the angular distance error, to the left or right from the desired track (DTK) to the aircraft track (TK).

Question: The FMS provides the following functions: **1- fuel management 2- lateral flight plan management** 3- de icing management **4- aircraft position computation** The combination which regroups all of the correct statements is:

Question: The FMS FLIGHT PLAN or LEG page displays the following parameters relative to the flight plan legs or waypoints**: 1 - track** 2 - magnetic variation 3 - waypoint elevation **4 - speed 5 - altitude constraint or prediction** The combination that regroups all of the correct statements is:

Question: The FMS FLIGHT PLAN or LEG page displays the following parameters relative to the flight plan legs or waypoints: 1 - aircraft position (Long / Lat) **2 - speed 3 - distance 4 - track** The combination that regroups all of the correct statements is:

Question: The role of the FMS is to aid the flight crew with: 1 - immediate actions in case of emergency procedure **2 - navigation 3 - in-flight performance optimization** 4 - electronic check-lists The combination that regroups all of the correct statements is:

Question: The role of the FMS is to: **1 - aid the crew with navigation** 2 - shut down the engine in case of a malfunction 3 - automatically avoid conflicting traffic when autopilot engaged **4 - reduce crew workload 5 - aid fuel efficiency** The combination that regroups all of the correct statements is:

Question: The FMS provides the following functions: **1- vertical flight plan management 2- aid for fuel management 3- lateral flight plan management** 4- terrain awareness and warning The combination that regroups all of the correct statements is:

Question: Concerning the FMS, the parameters used to work out the vertical flight profile are: **1 - zero fuel weight 2 - cost index 3 - fuel quantity** 4 - oxygen quantity available for flight crew 5 - minimum safe enroute altitude The combination that regroups all of the correct statements is:

Question: The position data (lat, long) computed by an IRS can be used by the:

A. ILS receiver.
B. **FMS.** FMS is the best answer but not actually correct. The IRS tells the FMS about motion of the aircraft, not where it is.
C. TCAS.
D. ADC.

Question: The FMS is approved to provide guidance for the following approaches:

A. non precision and precision approaches.
B. precision approaches limited to CAT II.
C. non precision approaches and ILS CAT I precision approaches only.
D. **non precision approaches.** The FMS can only give guidance on non-precision approaches.

Question: Concerning the FMS (Flight Management System), the cost index is determined by dividing:

A. **aircraft operating cost by fuel cost.** The cost index is used to operate the aircraft in the most economical way.
B. fuel cost by aircraft operating cost.
C. fuel cost by aircraft cruise speed.
D. aircraft cruise speed by fuel cost.

Question: Concerning the FMS (Flight Management System), entering a high cost index results in:

A. maximum range airspeed.
B. minimum airspeed.
C. minimum trip fuel.
D. **high airspeed and high fuel trip.**

This would be appropriate where fuel is inexpensive. The high speed flight saves on airframe hours.

Question: Concerning the FMS (Flight Management System), entering a cost index of zero results in:

A. minimum range airspeed.
B. maximum cruising airspeed.
C. minimum airspeed.
D. maximum range airspeed.

Question: Concerning the FMS (Flight Management System), entering a cost index of zero:

A. modifies only cruising airspeed.
B. results in minimum trip fuel. Minimum fuel burn but there could be a penalty in airfrafme hours.
C. results in maximum trip fuel.
D. does not influence fuel consumption.

Question: The FMS provides the following functions**: 1- lateral and vertical flight plan management** 2- de icing management **3- aircraft position computation** 4- terrain awareness and warning The combination that regroups all of the correct statements is:

Question: The FMS provides the following functions: **1- aircraft position computation** 2- traffic alerts **3- lateral flight plan management 4- fuel management** The combination which regroups all of the correct statements is:

Question: The FMS provides the following functions: **1- radio tuning 2- fuel management 3- lateral flight plan management** 4-traffic alerts The combination which regroups all of the correct statements is:

Question: The FMS navigation database includes the following data: 1- obstacles **2- waypoints 3- SID, STAR** 4- terrain cells **5- magnetic variation** The combination which regroups all of the correct statements is:

Question: The FMS navigation database includes the following data: 1- obstacles **2- navaids 3- SID, STAR and approaches procedures 4- waypoints 5- airways** The combination which regroups all of the correct statements is:

Question: The FMS navigation database includes the following data: **1- airports** 2- take off speeds **3- navaids** 4- terrain cells **5- runways** The combination which regroups all of the correct statements is:

Question: The FMS navigation database includes the following data: **1- airports** 2- obstacles **3- navaids 4- airways** 5- terrain cells The combination which regroups all of the correct statements is::

Question: The FMS provides the following functions: 1 - traffic advisories emission 2 - resolution advisories emission **3 - aid for fuel management 4 - lateral flight plan management** The combination that regroups all of the correct statements is:

Question: Components of the FMS are: **1 - CDU (Control and Display Unit) 2 - Database 3 - FMC (Flight Management Computer)** 4 - Electronic check-lists 5 - GPWS mode controller The combination that regroups all of the correct statements is:

Question: The FMS enables to fly an optimum flight profile. For this, the FMC (Flight Management Computer) uses: **1 - flight-crew entered flight plan data 2 - data from ADC 3 - aircraft position** 4 - a memorised relief world data base **5 - data from the FMC navigation data base** The combination that regroups all of the correct statements is:

Question: For a FMS designed with the vertical navigation (VNAV) capability coupled to the autopilot, the FMS vertical command output can be: 1 - an angle of attack **2 - a flight path angle 3 - a speed target** The combination that regroups all of the correct statements is

Question: In a Flight Management System (FMS), control Display Units (CDUs) are used preflight to The IRSs and FMC are initialised manually, not automatically. The Flight Director System and auto throttles are not initialised by the CDUs.

A. manually initialize the IRSs, FMC and Autothrottle with dispatch information
B. manually initialize the Flight Director System and FMC with dispatch information
C. automatically initialize the IRSs and FMC with dispatch information
D. manually initialize the IRSs and FMC with dispatch information

Question: For most FMS the Fuel prediction function, which computes the remaining fuel along the flight plan, takes into account the following situations: 1- the additional drag resulting in a flight carried out with the landing gear extended **2- the current wind computed or the resulting ground speed** 3- the additional drag resulting in a flight carried out with the flaps stucked, partly extended 4- the additional drag resulting in a missing fuselage or wing element in compliance with the CDL The combination that regroups all of the correct statements is:

Question: The duration of a FMS navigation database loaded before expiring is:

A. 15 days.
B. 3 months.
C. 2 months.
D. 28 days.

Question: What is the validity period of the 'permanent' data base of aeronautical information stored in the FMC In the B737-400 Flight Management System?

A. 3 calendar months
B. one calendar month
C. 14 days
D. 28 days

A confusing question however, what I believe it is trying to check is your understanding of the fact that each nav database is valid for a 28 day period and that, from the moment you receive it until it is finally installed in an aircraft, someone needs to check the period of validity at every stage of the process.

Question: The FMS navigation database processing should include the following check(s):

A. at each phase of the process, from the reception of each supplier's data to the distribution and loading of the formatted database.
B. at the end of the FMS formatting phase of all of the data collected and assembled.
C. at the loading phase into the FMS, the check is performed by the FMS.
D. at the reception of each supplier's data and after the assembly of those data collected.

Question: The purpose of the FMS temperature compensation function is:

A. to provide compensated temperatures at the waypoints along the vertical approach profile.
B. to provide the destination airport or runway elevation.
C. to provide the destination airport air temperature.
D. to provide compensated altitudes for temperatures different from standard atmosphere along the vertical approach profile.

Question: The Fuel management performed by most FMS along the flight plan is considered as:

A. an accurate and very reliable function providing that the fuel on board quantity has been properly initialized by the crew before start up.
B. an accurate function which can be considered as the prime source to determine the remaining fuel quantity along the flight plan.
C. the prime source to manage the fuel consumption along the flight.
D. a function which helps the crew to estimate the remaining fuel quantity along the flight plan but should not be considered as an accurate and reliable source.

Question: The Fuel management performed by most FMS along the flight plan is considered as:

A. the prime mean to manage the Fuel consumption along the flight.
B. an accurate and very reliable function providing that the Fuel on board quantity has been properly initialized by the crew before start up.
C. a function which helps the crew to estimate the remaining Fuel quantity along the flight plan but should not be considered as an accurate and reliable mean.
D. an accurate function which can be considered as the prime mean to determine the remaining Fuel quantity along the flight plan.

The FMS knows the tank contents and the fuel used. It **should** be a very accurate means for fuel management. **However....** we would still x-check tank quantity hourly or at each waypoint during the flight as a backup.If the tank reading is in error we would pick it up at this point. The FMS would not recognise a faulty tank reading.

Question: Some of the FMS have a navigation mode called Dead Reckoning mode (DR), computing airspeed, heading, wind data ground speed and time. This mode is:

A. an operating mode used to intercept radials To or From a flight plan waypoint.
B. the normal navigation mode for FMS which do not use Inertial navigation Systems INS to compute the aircraft position.
C. **a back up navigation mode to compute a FMS position when the other navigation sensors are no longer operating**.
D. a navigation mode used to monitor the FMS position.

Question: For a FMS designed with the lateral navigation (LNAV) capability coupled to the autopilot, the FMS lateral command output is:

A. a calibrated airspeed (CAS) and a cross track distance (XTK).
B. a longitudinal acceleration and a roll rate.
C. a lateral acceleration.
D. a roll angle or a heading target.

'Lateral command' (i.e. movement left/right is achieved by banking the aircraft (roll angle demand) until it is going the right way (heading target).

uestion: The FMS lateral offset function consists in:

A. displaying the lateral cross track deviation (XTK) of the aircraft according to the active flight plan leg.
B. flying along the flight plan legs with a constant right or left offset manually entered on the FMS CDU.
C. flying a FMS selected lateral pattern used for search and rescue operations.
D. creating a new waypoint using a reference flight plan waypoint and a distance From this waypoint along the flight plan legs.

FMS lateral offset is a simple input on the ROUTE page as L5 or R5 meaning left 5nm or right 5nm. This requirement is not in the present ATPL syllabus. Not sure where the question came from. We have no information in our notes, sorry.

Question: The FMS Required Time of Arrival (RTA) function can provide:

A. a time slot computed for the arrival time at destination, using the current aircraft speed and speed constraints along the flight plan.
B. a time prediction at the flight plan waypoints based on the current speed and speed constraints along the flight plan.
C. a time prediction at the active TO waypoint complying with the wind computation.
D. a speed target to satisfy a time constraint entered at a flight plan waypoint.

Question: The "overfly" symbol related to a waypoint on an FMS page indicates that:

A. a time estimate is given for this waypoint.
B. a fuel prediction is given for this waypoint.
C. the aircraft is required to pass directly over this waypoint.

With overfly you can program the FMS to actually fly you over a waypoint, even though it might be more efficient to transition past it.
ie say you're on a track of 090 and at a given waypoint you change course to 180. Now if you OVERFLY then you go up to the waypoint before turning onto 180. If you TRANSITION, you in effect turn early (before you reach the waypoint) and cut the corner.

D. a turn anticipation is permited.

Question: The FMS Overfly function consists in:

A. manually selecting a flight plan to fly over each of the waypoints at the transitions along the route.
B. selecting the secondary flight plan making it active to fly over the legs.
C. manually selecting a flight plan waypoint to hold over for a selected time.
D. manually selecting a flight plan waypoint to fly over when sequencing it instead of flying by at the transition.

Question: When two waypoints are entered on the FMS flight plan page, a track between the two fixes is computed and can be displayed on the Navigation map display (ND). This leg created is:

A. two rhumb-lines joined by a straight segment.
B. a rhumb-line.
C. a great circle arc.
D. two great circle arcs joined by a straight segment.

Question: The Navigation Display (ND) modes can be: **1 - ARC or MAP, covering 45 degrees on either side of the instantaneous track 2 - ROSE or MAP CENTERED: rose with current heading up 3 - PLAN: map orientated to true north** The combination that regroups all of the correct statements is:

Question: The Navigation Display (ND) of an EFIS equipped aircraft can display the following data:

A. flight plan, engine failure, navaids, resolution advisories.
B. flight plan, weather radar, terrain map, intruding traffics.
C. intruding traffics, altitude, autopilot active modes, weather radar.
D. terrain map, navaid bearings, flight director active modes.

Question: On the navigation display (ND) of an EFIS equipped aircraft, the colours used are:

A. magenta or white for the active waypoint (TO waypoint), green for light precipitation.
B. amber or white for the active waypoint (TO waypoint), yellow for high precipitation.
C. magenta or red for the active waypoint (TO waypoint), amber for medium precipitation.
D. white or blue for the active waypoint (TO waypoint), red for medium precipitation.

Question: For an aircraft EFIS equipped: 1- the ND displays flight director command bars **2- the PFD displays the altimeter setting** 3- the ND displays the attitude of the aircraft 4- the flight mode annunciator is part of the ND The combination regrouping all the correct statements is:

Question: An EFIS includes the following components:

A. ADC, inertial navigation computer, display unit(s).
B. symbol generator, display unit(s), control panel.
C. FMS, symbol generator, display unit(s).
D. display unit(s) only.

Question: According to AMC 25-11 concerning the electronic display systems, the colours used are:

A. amber for the system limits, white for autopilot or flight director engaged modes.
B. red for warnings, magenta for autopilot or flight director engaged modes.
C. red for flight enveloppe and system limits, green for autopilot or flight director engaged modes.

D. red for caution & abnormal sources, white for flight enveloppe limits.

Question: According to AMC 25-11 concerning the electronic display systems, the colour associated with a caution-type alert is:

A. white.
B. amber or yellow.
C. magenta.
D. red.

Question: According to AMC 25-11 concerning the electronic display systems, the colour associated with an engaged mode is:

A. white.
B. magenta.
C. amber.
D. green.

Question: According to AMC 25-11 concerning the electronic display systems, the green colour is associated with the following indication:

A. armed mode.
B. status.
C. engaged mode.
D. advisory.

Question: According to AMC 25-11 concerning the electronic display systems, the white/cyan colours are associated with the following indication:

A. engaged mode.
B. warning.
C. caution.
D. armed mode.

Question: According to AMC 25-11 concerning the electronic display systems, the amber/yellow colours are associated with the following alert:

A. advisory.
B. waring.
C. status.
D. caution.

Question: According to AMC 25-11 concerning the electronic display systems, the colour associated with an armed mode is:

A. white or cyan.
B. green.
C. magenta.
D. yellow.

Question: According to AMC 25-11 concerning the electronic display systems, the colour associated with a warning-type alert is:

Question: According to AMC 25-11 concerning the electronic display systems, when exceeding the limits of the flight envelope, the colour accepted to alert the flight crew is:

A. yellow.
B. red.
C. magenta.
D. amber.

Question: According to AMC 25-11 concerning the electronic display systems, the red colour is associated with the following alert:

A. status.
B. warning.
C. caution.
D. advisory.

Question: The FMS is approved for Localizer approaches:

A. if the DMEs only are used as navigation sensors.
B. if the Localizer signals are used by the FMS.
C. if the GPS and DMEs only are used as combined navigation sensors.
D. if the GPS only is used as navigation sensor.

Question: The most common sensors interfacing a FMS to compute the aircraft position along the flight plan are: **1- GPS** 2- NDB **3- DME** 4- LOCALIZER The combination that regroups all of the correct statements is:

Question: The most common sensors interfacing a FMS to compute the aircraft position along the flight plan are: 1- MLS **2- GPS 3- VOR 4- IRS** The combination which regroups all of the correct statements is:

Question: The most common sensors interfacing a FMS to compute the aircraft position along the flight plan are: **1- IRS 2- DME** 3- NDB **4- GPS** The combination which regroups all of the correct statements is:

Question: The FMC determines and update present aircraft position from the following systems**: 1 - LOC 2 - DME 3 - IRS 4 - GPS** The combination that regroups all of the correct statements is:

Question: The FMS is approved to provide guidance for the following approaches: **1- RNAV** 2- ILS 3- MLS **4- VOR,** NDB The combination which regroups all of the correct statements is:

On some aircraft the FMS takes inputs from VOR, ADF, DME, Rad alt, SSR, ILS, AWR, CADC, IRS, GPS, MLS, LORAN, etc. Of these only ILS and MLS provide their own guidance information to position the aicraft on the required approach path, the remainder require help from the FMS to position the aircraft on the required track.

Question: The FMS cross track (XTK) is: XTK = distance left or right of the great circle track between waypoints.

A. the abeam distance error, to the left or right from the desired flight plan leg to the aircraft position.
B. the distance error between the FMS computed position and the GPS computed position.
C. the distance error between the FMS computed position and the IRS computed position.
D. the angular distance error, to the left or right from the desired track (DTK) to the aircraft track (TK).

Question: The FMS vertical navigation management is generally performed based on:

A. the GPS altitude computed by the GPS receiver.
B. a mix of baro and GPS altitudes.
C. the geometric altitude input from the Terrain Awareness and Warning System (TAWS).
D. the baro altitude input from the ADC.

Question: When engaged in the FMS lateral navigation mode (LNAV) the autopilot uses:

A. the FMS active (TO) waypoint coordinates.
B. the path angle command computed by the FMS.
C. the roll or heading command computed by the FMS.
D. the FMS computation of the aircraft position and the FMS active (TO) waypoint bearing.

Question: The inputs to the GPWS (Ground Proximity Warning System), are: **1- Air Data Computer - (Mach number and Vertical Speed) 2- Radio Altimeter 3- NAV/ILS (Glide Slope)** 4- NAV/**VOR 5- Flap (position)** 6- Angle of Attack **7- Landing Gear (position)** The combination of correct statement is:

Question: In a FMS, MCDUs are used pre-flight to manually initialise with dispatch information the: **1 - Inertial Reference System (when installed).** 2 - Flight Director and Auto Flight Control System. 3 - Air Data Computer. **4 - Flight Management Computer** . The combination regrouping all of the correct statements is: Through the POS INIT page you give the IRS its start position and then load the FMC with flight plan and performance data.

Question: When a TCAS is operating, a failure of the active transponder will cause the TCAS to:

A. operate normally.
B. operate in the Traffic Advisory (TA) mode only.
C. operate in the Resolution Advisory (RA) mode only.
D. no longer operate normally.

Question: When a TCAS Resolution Advisory (RA) climb instruction is generated, the required vertical speed range displayed on the vertical speed indicator:

A. takes into account a 1.1 Vs stall margin.
B. takes into account a 1.3 Vs stall margin.
C. always takes into account the stall margin.
D. does not take into account the stall margin.

Question: The TCAS computer uses the following data: 1 - TAS **2 - Configuration (gear/flaps) 3 - Pressure altitude from the mode C transponder 4 - Height from the radio altimeter**

Question: With a TCAS II, when a corrective resolution is generated:

A. the IAS must be effectively modified without delay.
B. the vertical speed must be effectively modified without delay.
C. no action is required: vertical speed, heading and IAS can remained unchanged.
D. the heading must be effectively modified without delay.

Question: When the intruding aircraft is equipped with a transponder without altitude reporting capability, the TCAS II issues a:

A. "traffic advisory" and vertical "resolution advisory".
B. "traffic advisory", vertical and horizontal "resolution advisory".
C. "traffic advisory" and horizontal "resolution advisory".
D. "traffic advisory" only.

Without relative altitude TCAS cannot establish a risk of collision so it is a TA only

Question: When the intruding aircraft is equipped with a serviceable mode C transponder, the TCAS II generates a:

A. "traffic advisory", vertical and horizontal "resolution advisory".
B. "traffic advisory" and horizontal "resolution advisory".
C. "traffic advisory" only.
D. "traffic advisory" and vertical "resolution advisory."

Question: On the display of a TCAS 2 (Traffic alert and Collision Avoidance System), the traffic being the cause of a resolution advisory (RA) is represented by:

A. a white or cyan empty lozenge.
B. an amber solid circle.
C. a red full square.
D. a white or cyan solid lozenge.

Question: When the TCAS 2 (Traffic alert and Collision Avoidance System) generates a Resolution Advisory (RA), the associated intruder appears on TCAS display as a:

A. solid amber circle.
B. solid red circle.
C. solid amber square.
D. solid red square.

Question: On the display of a TCAS II, a traffic advisory is represented by:

A. a red full square.
B. a white or cyan solid lozenge.
C. an amber solid circle.
D. a white or cyan empty lozenge.

Question: On the display of a TCAS 2 (Traffic Alert and Collision Avoidance System), a traffic advisory is represented by:

A. an amber solid circle.
B. a white or cyan empty lozenge.
C. a red full square.
D. a white or cyan solid lozenge.

Question: On the display of a TCAS II, a proximate traffic is represented by:

A. a white or cyan empty lozenge.
B. a white or cyan solid lozenge. He's close to you but not presenting a threat yet and is shown as a solid white or cyan diamond.
C. an amber solid circle.
D. a red full square.

Question: The TCAS II has inputs from the radio altimeter in order to:

A. gradually inhibit the resolution advisories (RAs) when getting closer to the ground.
B. determine the relative height of the intruder.
C. to alert the crew from a dangerous proximity of the ground.
D. stop the TCAS operation below 2500 AGL.

You reach a point where proximity to terra firma is of more concern than a RA from TCAS.

Question: The upper antenna of the TCAS II is:

A. directional because it is merged with the transponder antenna.
B. omnidirectional because it is merged with the transponder antenna.
C. omnidirectional to improve the surveillance of intruders.
D. directional and separate from the transponder antenna.

Question: Your aircraft and an intruding aircraft both are TCAS 2 (Traffic alert and Collision Avoidance System) equipped. Your TCAS determines the bearing of the intruding aircraft by:

A. **using a specific directional antenna.** It needs to be directional (we need to know where they are coming from) and the upper aerial improves overall coverage.
B. space.
C. comparing the GPS positions of the two aircraft.
D. using the bearing function of the on-board weather radar.

Question: In the event of a conflict, the TCAS 2 (Traffic Collision alert and Avoidance System) presents warnings to the crew such as:

A. "Too low terrain"
B. "Glide Slope"
C. "Turn left" or "Turn right"
D. "Climb" or "Descent" Vertical resolution only. TCAS only provides vertical conflict resolution.

Question: The TCAS II gives avoidance resolutions:

A. only in the vertical plane
B. based on speed control
C. only in the horizontal plane
D. in horizontal and vertical planes

Question: A TCAS II provides:

1. a simple intruding aeroplance proximity warning

2. the intruder relative position and possibly an indication of a collision avoidance manoeuvre within the horizontal plane only.

3. the intruder relative position and possibly an indication of a collision avoidance manoeuvre within the vertical plane only.

4. the intruder relative position and possibly an indication of a collision avoidance manoeuvre within both the vertical and horizontal planes.

Question: Concerning the TCAS II: **1 - Neither advisory nor traffic display is provided fro aircraft that do not have an operating transponder. 2 - TCAS II operation is independent of ground-based air traffic control. 3 - TCAS II has feeds from the radio altimeter.**

Question: When comparing a TCAS Traffic Advisory (TA) and a Resolution Advisory (RA), which of the following statements is correct?

A. A TA provides the display of the traffic on the Navigation Display and the red arc on the vertical speed indicator; an RA provides the voice alerts.
B. An RA indicates the relative position of the intruding traffic; a TA provides a vertical traffic avoidance manœuvre.
C. An RA generates the intruders colour codes on the Navigation Display according to the threat; a TA manages the other TCAS functions.
D. A TA indicates the relative position of the intruding traffic; an RA provides a vertical traffic avoidance manœuvre.

Question: On a TCAS II, a preventative resolution advisory:

A. requires the pilot to modify effectively the vertical speed of his aircraft.
B. requires the pilot to modify the speed of his aircraft.
C. requires the pilot to modify the heading of his aircraft
D. advises the pilot to monitor the vertical speed.

Monitor Vertical Speed", ie. keep vertical speed within given limits.That is to say 'we will prevent a collision by maintaining the current vertical speed', therefore a 'preventative RA'.

Question: Your aircraft and an intruding traffic both are TCAS II equipped. Your TCAS determines the relative height of the intruding aircraft by:

A. using the range function of the on board weather radar.
B. interrogating the ATC ground station.
C. comparing the GPS heights of the two aircraft.
D. **comparing the altitudes of the two aircraft.** Using Mode C.

Question: Your aircraft and an intruding traffic are both TCAS II equipped. Your TCAS:

A. can generate coordinated resolution advisories.
B. cannot generate coordinated resolution advisories.
C. can generate coordinated resolution advisories by interrogating the radar ground station.
D. can generate coordinated resolution advisories by activating the on-board radar system.

Question: Your aircraft and an intruding aircraft both are TCAS II equipped. If the transponder of the intruder is switched off or unserviceable:

A. the intruding aircraft is invisible to your TCAS equipment.
B. the intruding aircraft remains visible to your TCAS equipment, but only TAs (traffic advisories) can be generated.
C. the information available to your TCAS equipment is two dimensional only.
D. the intruding aircraft remains visible to your TCAS equipment, but only RAs (resolution advisories) can be generated.

Question: Your aircraft and an intruding traffic are both TCAS II equipped. Your TCAS can generate:

A. traffic advisories coordinated with the ATC instructions.
B. traffic advisories and resolution advisories
C. coordinated traffic advisories only
D. resolution advisories coordinated with the ATC instructions.

Question: A TCAS II generates a traffic advisory (TA) when:

A. a potential collision threat exists.
B. the intruder becomes "other traffic".
C. the intruder becomes a "proximate traffic".
D. a serious collision threat exists.

Question: Your aircraft and an intruding aircraft both are TCAS 2 (Traffic alert and Collision Avoidance System) equipped. Your TCAS determines the range of the intruding aircraft by:

A. using the range function of the on-board weather radar.
B. measuring the time lapse between the transmission of an interrogation signal and the reception of a reply signal from the transponder of the intruder.
C. comparing the GPS positions of the two aircraft.
D. measuring the time lapse between the transmission of an interrogation signal and the reception of a reply signal from the ground station.

Question: Your aircraft and an intruding traffic are both TCAS II equipped. The information available to your TCAS equipment is:

A. three dimensional; your TCAS can generate both TAs (Traffic Advisories) and RAs (Resolution Advisories).

B. two dimensional only; avoidance manoeuvres between both aircraft cannot be coordinated.
C. three dimensional; avoidance manoeuvres between both aircraft cannot be coordinated.
D. two dimensional only; your TCAS can generate both TAs (Traffic Advisories) and RAs (Resolution Advisories).

Question: Your aircraft is TCAS II equipped; an intruding traffic only has a mode A transponder. The information available to your TCAS equipment is:

A. three dimensional; your TCAS can generate both TAs (Traffic Advisories) and RAs (Resolution Advisories).
B. three dimensional; your TCAS cannot generate TAs (Traffic Advisories).
C. two dimensional only; your TCAS cannot generate TAs (Traffic Advisories).
D. two dimensional only; your TCAS cannot generate RAs (Resolution Advisories).

Question: Your aircraft is TCAS II equipped; an intruding traffic only has a mode C transponder. The information available to your TCAS equipment is:

A. three dimensional; your TCAS can generate both TAs (Traffic Advisories) and RAs (Resolution Advisories).
B. two dimensional only; your TCAS cannot generate TAs (Traffic Advisories).
C. two dimensional only; your TCAS cannot generate RAs (Resolution Advisories).
D. three dimensional; your TCAS cannot generate RAs (Resolution Advisories).

Question: A TCAS Resolution Advisory (RA) voice message "CLIMB - CLIMB NOW" repeated twice is generated:

A. when cleared of conflict, and below the cruise altitude.
B. after a "DESCEND" RA when a reversal in the vertical manoeuvre sense is required.
C. each time a "CLIMB" RA is announced by a voice message.
D. after a "CLIMB" RA when the climb vertical rate is too weak.

Question: Concerning the TCAS 2, when receiving a resolution advisory (RA), crew members should:

A. try to establish visual contact with the intruder before taking any evasive action.
B. disregard this RA if they have a mode S transponder.
C. immediatly initiate the required manoeuvre.
D. immediatly engage autopilot which will be temporarily controlled by the TCAS.

Question: The main function(s) of a TCAS is to: 1 - alert the crew to ground proximity **2 - alert the crew to possible conflicting traffic** 3 - provide terrain alerting and display 4 - automatically resolve conflict when autopilot engaged The combination that regroups all of the correct statements is:

Question: The principle of the TCAS makes use of:

A. transponders fitted in the aircraft
B. air traffic control radar systems
C. FMS
D. airborne weather radar system

Question: Your aircraft is TCAS II equipped. To be able to generate a traffic advisory (TA), the intruder must be at least equipped with:

A. a transponder mode A.

TCAS cannot interrogate pure Mode A transponders but can interrogate Mode A/C transponders with altitude reporting, Mode C, turned off. Either the examiner is mistaken with the question and given answer, or he is implying that the Mode C is turned off

B. a transponder mode C.
C. a transponder mode S.
D. a TCAS II.

Question: Your aircraft is TCAS II equipped. To be able to generate a resolution advisory (RA), the intruder must be at least equipped with:

A. a transponder mode S.
B. a transponder mode A.
C. a TCAS II.
D. a transponder mode C.

Question: TCAS 2 (Traffic Collision Avoidance System) uses for its operation:

A. the echoes from the ground air traffic control radar system.
B. the replies from the transponders of other aircraft. TCAS only looks at other aircraft's transponders.
C. both the replies from the transponders of other aircraft and the ground-based radar echoes.
D. the echoes of collision avoidance radar system especially installed on board.

Question: Concerning the TCAS II:

A. In one of the system modes, the warning: "PULL UP" is generated
B. In one of the system modes, the warning: "TOO LOW TERRAIN" is generated
C. No protection is available against aircraft not equipped with a serviceable FMS
D. No protection is available against aircraft not equipped with a serviceable SSR transponder. Unless both aircraft have a transponder TCAS II will not work.

Question: The TCAS II data display devices can be in the form of: **1- a specific dedicated screen 2- a screen combined with the weather radar 3- a variometer represented on a liquid crystal screen which allows the display of Traffic Advisory (TA) and Resolution Advisory (RA) 4- an EFIS (Electronic Flight Instrument System) screen** The combination regrouping all the correct statements is:

Question: The TCAS II (Traffic Collision Avoidance System) provides : **1- traffic information (TA: Traffic Advisory)** 2- horizontal resolution (RA: Resolution Advisory) **3- vertical resolution (RA: Resolution Advisory)** 4- ground proximity warning The combination regrouping all the correct statements is:

Question: A TCAS 2 (Traffic Collision Avoidance System) provides:

A. the intruder relative position and possibly an indication of a collision avoidance manoeuvre within both the vertical and horizontal planes.
B. a simple intruding aeroplane proximity warning.
C. the intruder relative position and possibly an indication of a collision avoidance manoeuvre within the horizontal plane only.
D. the intruder relative position and possibly an indication of a collision avoidance manoeuvre within the vertical plane only.

Question: If a TCAS Resolution Advisory (RA) requires an immediate descent while at the same time ATC requests an immediate climb, the crew should:

A. consider both requests and remain at the same level.
B. start a climb first and then follow the TCAS RA.
C. comply with the ATC request.
D. follow the TCAS RA and inform the ATC.

Question: On a TCAS2 (Traffic Collision Avoidance System), a corrective "resolution advisory" (RA) is a "resolution advisory":

A. which does not require any action from the pilot but on the contrary asks him not to modify his current vertical speed rate.
B. asking the pilot to modify the speed of his aircraft.
C. asking the pilot to modify effectively the vertical speed of his aircraft.
D. asking the pilot to modify the heading of his aircraft.

Question: On a TCAS 2 (Traffic Collision Avoidance System), a preventative resolution advisory:

A. asks the pilot to modify effectively the vertical speed of his aircraft.
B. asks the pilot to modify the speed of his aircraft.
C. advises the pilot to keep the vertical speed within given limits.
D. asks the pilot to modify the heading of his aircraft.

Question: On a TCAS 2 (Traffic Collision Avoidance System) the preventive "resolution advisory" (RA) is a "resolution advisory":

A. that advises the pilot to avoid certain deviations from the current vertical rate but does not require any change to be made to that rate.
B. asking the pilot to modify the speed of his aircraft.
C. asking the pilot to modify the heading of his aircraft.
D. asking the pilot to modify effectively the vertical speed of his aircraft.

Question: The TCAS II data display devices can be in the form of: **1- a specific dedicated screen 2- a screen combined with the weather radar 3- a variometer represented on a liquid crystal screen which allows the display of Traffic Advisory (TA) and Resolution Advisory (RA) 4- an EFIS (Electronic Flight Instrument System) screen.** The combination regrouping all the correct statements is:

Question: The TCAS (Traffic Collision Avoidance System) computer receives information: 1 - about the aircraft true **airspeed 2 - about the airplane configuration 3 - about the pressure altitude through the mode C transponder 4 - from the radio altimeter** The combination regrouping all the correct statements is:

Question: The stall warning system of a large transport airplane includes: **1- an angle of attack sensor 2- a computer** 3- a transmitter originating from the anemometer 4- an independent pitot probe **5- a transmitter of the flap/slat position indicating system** The combination regrouping all the correct statements is:

Question: The stall warning system receives information about the: **1- aeroplane angle of attack** 2- aeroplane speed 3- aeroplane bank angle **4- aeroplane configuration** 5- load factor on the aeroplane The combination regrouping all the correct statements is:

Question: A flux valve detects the horizontal component of the earth"s magnetic field 1- the flux valve is made of a pair of soft iron bars **2- the information can be used by a "flux gate" compass or a directional gyro** 3- the flux gate valve casing is dependent on the aircraft three inertial axis **4- the accuracy on the value of the magnetic field indication is less than 0,5°.** The combination regrouping all the correct statements is :

Question: The properties of a gyroscope are: **1 - rigidity in space** 2 - rigidity on earth **3 - precession** 4 - Schuler oscillations The combination regrouping all the correct statements is: The properties of a gyro are precession and rigidity.

Question: The rate of turn indicator uses a gyroscope: 1 - the spinning wheel axis of which is parallel to the yawing axis. **2 - the spinning wheel axis of which is parallel to the pitch axis**. 3 - the spinning wheel axis of which is parallel to the roll axis**. 4 - with one degree of freedom.** 5 - with two degrees of freedom

The combination regrouping all the correct statements is: NB: the degree(s) of freedom of a gyro does not take into account its rotor spin axis.

Question: Without any external action, the axis of a free gyroscope is fixed with reference to:

A. **space**.
B. the aircraft.
C. the apparent vertical.
D. the earth.

Gyroscopic inertia = rigidity. This increases with increase of RPM and/or mass of the rotor and with moving mass to the rim of the rotor to increase angular momentum.

Question: Due to the rotation of the earth, the apparent drift of a horizontal free gyroscope at a latitude of 45°N is:

A. 2° per hour to the right.
B. 11° per hour to the right.
C. 7° per hour to the left.
D. 15° per hour to the left.

A gyro will show apparent drift due to the earth's rotation. This is equal to 15 °/hr at the poles and zero at the equator.
You can calculate the rate of apparent drift by 15 x sin of the latitude.
Therefore for this particular question: 15 x sin 45 =10.6 °/hr.
In the northern hemisphere the drift is to the right or clockwise and the indication will decrease. This is indicated by a negative sign: - 10.6 °/hr.
If in the southern hemisphere drift is Positive sign or said to rotate left hand or counter clockwise. The indication increases.

Question: Due to the rotation of the earth, the apparent drift of a horizontal free gyroscope at a latitude of 30°S is:

A. 11° per hour to the right.
B. 2° per hour to the left.
C. 15° per hour to the right.
D. 7.5° per hour to the left.

Drift due to Earth rate = 15° x sinlat °/hr = 15° x sin30° = 15° x 0.5 = 7.5°/hr. In the southern hemisphere the gyro appears to drift anti-clockwise; i.e. to the left.

Question: A free gyro has the axis of the spinning rotor horizontal and aligned with the geographic meridian. If this free gyro is situated at latitude 60°N, the apparent drift rate according to the earthbound observer is: sin60=kök(3)/ 2 =0.86

A. 13°/h to the left.
B. 7.5°/h to the left.
C. 7.5°/h to the right.
D. 13°/h to the right.

Question: A directional gyro is corrected for an apparent drift due to the earth's rotation at latitude 30°S. During a flight at latitude 60°N, a drift rate of 15.5°/h to the right is observed. The apparent wander due to change of aircraft position is:

2.5°/h to the right.

5°/h to the right.

2.5°/h to the left.

5°/h to the left.

The latitude nut is set to 30°S and will induce drift of 15° x sinlat = 15° x sin30°= 15° x 0.5 = 7.5°/hr clockwise (to the right) to compensate for equal and opposite Earth rate at 30°S. Drift due to Earth rate = 15° x sinlat °/hr = 15° x sin60° = 15° x 0.866 = 13°/hr. In the northern hemisphere the gyro appears to drift clockwise; i.e. to the right.If the aircraft was stationary at 60°N we would expect to see the gyro drift at a rate of 20.5° clockwise (to the right) because of Earth rate and latitude nut correction (13°/hr + 7.5°/hr = 20.5°/hr). If the gyro is observed to be drifting at a rate of 15.5°/hr to the right (clockwise) there must be drift of 5°/hr to the left (anticlockwise) due to transport wander.

Question: A manifold pressure gauge of a piston engine measures :

A. absolute pressure in intake system near the inlet valve.
B. fuel pressure leaving the carburettor.
C. absolute airpressure entering the carburettor.
D. vacuum in the carburettor.

Question: In the building principle of a gyroscope, the best efficiency is obtained through the concentration of the mass:

A. on the periphery and with a low rotational speed.
B. on the periphery and with a high rotational speed.
C. close to the axis and with a low rotational speed.
D. close to the axis and with a high rotational speed.

Question: The inertia of a gyroscope is greater when:

A. its rotation speed is lower and the mass of the spinning wheel is closer to the axis of rotation.
B. its rotation speed is lower and the mass of the spinning wheel is located further from the axis of rotation.
C. its rotation speed is higher and the mass of the spinning wheel is located further from the axis of rotation.
D. its rotation speed is higher and the mass of the spinning wheel is closer to the axis of

Question: One of the errors inherent in a ring laser gyroscope occurs at low input rotation rates tending towards zero when a phenomenon known as 'lock-in' is experienced. What is the name of the technique, effected by means of a piezo-electric motor, that is used to correct this error?

A. zero drop
B. cavity rotation
C. dither
D. beam lock

A laser gyro measures angular accelerations and an accelerometer measures linear accelerations in a 'strap-down' system; there is no platform to be stabilised. During the ALIGN procedure the gyros are used to measure Earth rate; not Earth rate precession which is rate of change of Earth rate.

Question: A ring laser gyro is:

A. a device which measures the earth rate precession
B. used for stabilising the INS platform
C. a device which measures angular movements
D. an optical accelerometers

Question: For an aircraft flying a true track of 360° between the 5°S and 5°N parallels, the precession error of the directional gyro due to apparent drift is equal to:

A. -5°/hour
B. +5°/hour
C. 15°/hour
D. 0°/hour

Earth rate cancels out (same amount N & S of the Equator) and no transport wander travelling due North (no East/West movement so no transport wander).

Question: The spin axis of the turn indicator gyroscope is parallel to the:

A. longitudinal axis.
B. yaw axis.
C. pitch axis. The rate gyro in the turn indicator has its spin axis aligned with the lateral axis of the aircraft; the axis about which the aircraft pitches.
D. roll axis.

Question: The gyroscope used in an attitude indicator has a spin axis which is:

A. vertical. Only the AH has an earth gyro; kept in local vertical by detecting gravity.
B. horizontal, parallel to the longitudinal axis.
C. horizontal, perpendicular to the yaw axis.
D. horizontal, perpendicular to the longitudinal axis.

Question: A rate gyro is used in a: 1 - directional gyro indicator. **2 - turn co-ordinator**. 3 - artificial horizon. The combination regrouping all the correct statements is:

1 = tied, 2 = rate, 3 = earth gyros.

Question: A directional gyro is: **1- a gyroscope free around two axis** 2- a gyroscope free around one axis 3- capable of self- orientation around an earth-tied **direction 4- incapable of self-orientation around an earth-tied direction** The combination which regroups all of the correct statements is: The tied gyro in the direction indicator has two degrees of freedom and must be aligned by the pilot: 1 but not 2 and 4 but not 3.

Question: The maximum directional gyro error due to the earth rotation is:

A. 5°/hour
B. 15°/hour Drift due to Earth rate is zero at the Equator and maximum (15°/hr) at the Poles.
C. 90°/hour
D. 180°/hour

Question: Heading information given by a gyro platform, is given by a gyro at :

A. 2 degrees-of-freedom in the horizontal axis
B. 2 degrees-of-freedom in the vertical axis
C. l degree-of-freedom in the vertical axis
D. 1 degree-of-freedom in the horizontal axis

Question: An airborne instrument, equipped with a gyro with 2 degrees of freedom and a horizontal spin axis is: NB: the degree(s) of freedom of a gyro does not take into account its rotor spin axis.

A. an artificial horizon
B. a directional gyro
C. a fluxgate compass
D. a turn indicator

Question: For a directional gyro, the system which detects the local vertical supplies:

A. a levelling erection torque motor.
B. two torque motors arranged horizontally.
C. a torque motor on the sensitive axis.
D. a nozzle integral with the outer gimbal ring.

It looks to me like a badly worded question. Neither the basic DI nor the DI element of a Remote Indicating Gyro Compass erect to the local vertical. They both erect to aircraft horizontal, meaning the axis is horizontal. It wouldn't work if the axis was vertical. The electric RMI uses torque motors, the mechanical DI uses jets. As the question says "DI" I would have thought they wanted the "nozzle" answer but I see they want the "torque motor" answer.

Question: The latitude at which the apparent wande

A. the equator
B. the North pole
C. latitude 30°
D. latitude 45°

Question: The apparent wander of a directional gyro is 15°/h:

A. At the equator
B. At the latitude 45°
C. At the North pole Gyroscopic drift is maximum at the pole, zero at the equator.
D. At the latitude 30°

Question: In a directional gyro, gimballing errors are due to:

A. **a banked attitude** Gimballing error is induced by pitch and roll taking the gyro beyond its limitation stops or the geometry of the gimbals.
B. the aircraft's movement over the earth
C. the vertical component of the earth's magnetic field
D. an apparent weight and an apparent vertical

Question: The heading read on the dial of a directional gyro is subject to errors, one of which is due to the movement of the aircraft. This error...

As the aircraft moves over the Earth the spin axis of the gyro holds its alignment in space but moves relative to the North/South alignment of meridians.The amount of drift depends on latitude and East/West groundspeed; it is the change of convergency.

A. is, in spite of this, insignificant and may be neglected
B. is dependent on the ground speed of the aircraft, its true track and the latitude of the flight
C. shows itself by an apparent rotation of the horizontal axis of the gyroscope which seems to turn at 15° per hour to the right in the northern hemisphere
D. is at its greatest value when the aircraft follows a meridional track

Question: The gyroscope of a turn indicator has: (NB: the rotor spin axis is not counted for the number of degrees of freedom of the gyro .)

A. 3 degrees of freedom.
B. 0 degree of freedom.
C. 1 degree of freedom. The rate gyro is the only one with only one degree of freedom.
D. 2 degrees of freedom. A tied gyro; two degrees of freedom, controlled in one of them.

Question: A directional gyro consists of a: NB: the rotor spin axis is not counted for the number of degrees of freedom of a gyro.

A. 1 degrees-of-freedom vertical axis gyro.
B. 2 degrees-of-freedom vertical axis gyro.
C. 1 degrees-of-freedom horizontal axis gyro.
D. 2 degrees-of-freedom horizontal axis gyro.

Question: In a gyromagnetic compass, the gyro axis: 1 - is maintained vertical **2 - is maintained horizontal 3 - is servo-controlled in azimuth** 4 - is free in azimuth The combination that regroups all of the correct statements is: The remote indicating compass is based on a tied gyro with a horizontal spin axis which is controlled in azimuth using information from the detector unit *via* the signal selsyn**('error detector').**

Question: The input signal of the amplifier of the gyromagnetic compass resetting device originates from the:

A. flux valve.
B. directional gyro unit.
C. directional gyro erection device.
D. error detector.

Question: In the gyromagnetic compass, the heading information from the flux valve is sent to the:

A. erector system.
B. error detector.
C. amplifier.
D. heading indicator.

Question: In a gyromagnetic compass, the direction of the earth's magnetic field is given by the:

A. **flux valve.**
B. ADC.
C. directional gyro.
D. direct indicating compass.

Question: A gyromagnetic compass consists of: **1 - a horizontal axis gyro** 2 - a vertical axis gyro **3 - an earth's magnetic field detector 4 - an erection mechanism to maintain the gyro axis horizontal 5 - a torque motor to make the gyro precess in azimuth** The combination regrouping all the correct statements is:

Question: The flux valve of a gyromagnetic compass: **1 - feeds the error detector** 2 - feeds the direct indicating compass **3 - gives the earth's magnetic field direction** The combination regrouping all of the correct statements is:

Question: In a gyromagnetic compass, the signal feeding the precession amplifier comes from:

A. directional gyro erection device.
B. flux valve.
C. error detector.
D. directional gyro unit.

The 'flux valve' (detector unit) sends a signal to the 'error detector' (signal selsyn) which in turn sends a signal to the precession amplifier. The precession amplifier then sends a signal to the gyro precession coil.

uestion: In a gyromagnetic compass, the flux valve feeds the:

A. erecting system.
B. heading indicator.
C. amplifier.
D. error detector.

Flux valve = detector unit which sends information about the Earth's magnetic field to the re-synchronising system ('error detector').

Question: The gyromagnetic compass torque motor:

A. is fed by the flux valve
B. causes the directional gyro unit to precess The torque motor causes the gyro to precess in the vertical plane (topple) to keep its spin axis horizontal.
C. causes the heading indicator to precess
D. feeds the error detector system

Question: The characteristics of the directional gyro used in a gyro stabilised compass system are: NB: the degree(s) of freedom of a gyro does not take into account its rotor spin axis.

A. one degree of freedom, whose vertical axis, aligned with the real vertical to the location is maintained in this direction by an automatic erecting system.
B. one degree of freedom, whose horizontal axis is maintained in the horizontal plane by an automatic erecting system.
C. two degrees of freedom, whose horizontal axis corresponding to the reference direction is maintained in the horizontal plane by an automatic erecting system.
D. two degrees of freedom, whose axis aligned with the vertical to the location is maintained in this direction by an erecting system.

Question: The characteristics of the gyroscope used in a gyromagnetic compass system are: (NB: the rotor spin axis is not counted for the number of degrees of freedom of the gyro)

A. two degrees of freedom, whose axis is maintained in the direction of the local vertical by an erecting system.
B. two degrees of freedom, whose horizontal axis corresponding to the reference direction is maintained in the horizontal plane by an erecting system.

C. one degree of freedom, whose axis is maintained in the direction of the local vertical by an erecting system.
D. one degree of freedom, whose horizontal axis is maintained in the horizontal plane by an erecting system.

Question: A turn indicator is an instrument which indicates rate of turn. Rate of turn depends upon**: 1: bank angle 2: aeroplane speed** 3: aeroplane weight The combination regrouping the correct statements is:

Question: The artificial horizon uses a gyroscope with: (note: the degree(s) of freedom of a gyro does not take into account its rotor spin axis.)

A. two degrees of freedom, and its rotor spin axis is continuously maintained to local vertical by an automatic erecting system. A definition of an earth gyro.
B. one degree of freedom, and its rotor spin axis is continuously maintained to local vertical by an automatic erecting system.
C. one degree of freedom, and its rotor spin axis is continuously maintained in the horizontal plane by an automatic erecting system.
D. two degrees of freedom, and its rotor spin axis is continuously maintained in the horizontal plane by an automatic erecting system.

Question: An airborne instrument, equipped with a gyro with 1 degree of freedom and a horizontal spin axis is a: NB: the degree(s) of freedom of a gyro does not take into account its rotor spin axis.

A. gyromagnetic compass
B. turn indicator
C. directional gyro
D. fluxgate compass

Only the turn indicator uses a rate gyro (one degree of freedom); the others use tied gyros with two degrees of freedom.

Question: A gravity erector system is used to correct the errors on:

A. a directional gyro.
B. a turn indicator.
C. a gyromagnetic compass.
D. **an artificial horizon.** Pendulous vanes in the air-driven gyros and mercury switches in the electrical version.

Question: The rate of turn given by the rate of turn indicator is valid:

A. with flaps retracted only.
B. for all airspeeds.
C. for the cruising speed.
D. for the airspeed range defined during the calibration of the instrument.

The rate of turn indicator is calibrated for a specific TAS; typically the TAS at which the aircraft would normally fly an instrument approach.

Question: In a turn at a constant angle of bank, the rate of turn is:

A. inversely proportional to the aircraft true airspeed
B. proportional to the aircraft weight
C. proportional to the aircraft true airspeed
D. independent to the aircraft true airspeed

With a constant angle of bank, a decrease in TAS would require an increase in rate of turn. One goes up, the other goes down! They are inversely proportional.

Question: At a low bank angle, the measurement of rate-of-turn actually consists in measuring the:

A. pitch rate of the aircraft.
B. bank of the aircraft.
C. roll rate of the aircraft.

Turn indicators and turn coordinators actually measure rate of yaw. Up to rate 1 the rate of yaw and rate of turn are virtually the same.

D. yaw rate of the aircraft.

Question: Under normal operating conditions, when an aircraft is in a banked turn, the rate-of-turn indicator is a valuable gyroscopic flight control instrument ; when it is associated with an attitude indicator it indicates **: 1. the angular velocity of the aircraft about the yaw axis** 2. The bank of the aircraft **3. The direction of the aircraft turn** 4. The angular velocity of the aircraft about the real vertical The combination of correct statements is :

Question: The rate-of-turn is the:

A. **change-of-heading rate of the aircraft .** Rate of turn is the rate at which your heading is changing.
B. aircraft speed in a turn
C. pitch rate in a turn
D. yaw rate in a turn

Question: On the ground, during a right turn, the turn indicator indicates:

A. needle to the right, ball to right
B. needle in the middle, ball to right
C. needle in the middle, ball to left
D. needle to the right, ball to left .

The needle shows the direction of turn but, without any bank (on the ground) the ball shows that you are skidding out of the turn.

Question: When, in flight, the needle and ball of a needle-and-ball indicator are on the left, the aircraft is:

A. turning right with not enough bank
B. turning left with not enough bank
C. turning right with too much bank
D. turning left with too much bank

During a 'balanced' turn you have the exact correct mix of bank and yaw. If you change either one of these the ball will move off centre.

Question: When in flight, the needle and ball of a needle-and-ball indicator are on the left, the aeroplane is:

A. turning right with too much left rudder pedal.
B. turning right with not enough left rudder pedal.
C. turning left with too much left rudder pedal.
D. turning left with not enough left rudder pedal.

During a left turn too much bank or too little rudder will move the ball to the left.

Question: When, in flight, the needle of a needle-and-ball indicator is on the right and the ball is on the left, the aeroplane is:

A. turning right with too much right rudder pedal.
B. turning right with not enough right rudder pedal.
C. turning left with not enough right rudder pedal.
D. turning left with too much right rudder pedal.

Question: When, in flight, the needle of a needle-and-ball indicator is on the right and the ball on the left, the aircraft is:

A. turning left with not enough bank
B. turning right with too much bank
C. turning left with too much bank
D. **turning right with not enough bank ,** Skidding out of the turn with too much rudder or insufficient bank.

Question: After the initial 90 degrees of a turn at constant pitch and bank, a classic artificial horizon indicates:

A. too much nose-up and too much bank.
B. pitch and bank correct.
C. too much nose-up and bank correct.
D. too much nose-up and too little bank.

'Classic artificial horizon' = air driven instrument. After 90° of turn the errors are pitch up and bank under reads. After 180° of turn the errors are maximum pitch up and bank correct. After 270° of turn the errors are pitch up and bank over reads. After 360° of turn the instrument is back to correct indications.

Question: When an aircraft has turned 360 degrees with a constant attitude and bank, the pilot observes the following on a classic artificial horizon:

A. too much nose-up and bank too low
B. attitude and bank correct
C. too much nose-up and bank too high
D. too much nose-up and bank correct

Question: Gas turbine engine rotational speed (RPM) is usually sensed using either

A. a 3 phase AC tachometer generator or an AC phonic wheel system.
B. a 28VDC tachometer generator or an AC phonic wheel.
C. a 28VDC tachometer generator or a DC phonic wheel.
D. a single phase AC tachometer generator or an AC phonic wheel system.

Question: A three-phase electrical tachometer consists of:

A. three speed probes and a phonic wheel.
B. a speed probe and a phonic wheel.
C. a three-phase generator, a synchronous motor and a magnetic tachometer.
D. three associated dynamos.

Question: A control system consisting of four pendulous vanes is used in:

A. a gyromagnetic indicator.
B. a strap down inertial system.
C. a directional gyro indicator.
D. an air driven artificial horizon.

Question: Considering an air driven artificial horizon, when an airplane accelerates during the take-off run, the result is:

A. a correct and constant pitch indication.
B. a false nose-down indication.
C. a right or left wing down indication depending on the runway direction.
D. a false nose-up indication.

Question: Considering an air driven artificial horizon, when an airplane decelerates on ground during the landing, the result is:

When the aircraft accelerates an air driven artificial horizon will give a false indication of pitch up and bank right and on deceleration there will be a false indication of pitch down and bank left.

A. a false nose-up indication
B. a right or left wing down indication depending on the runway direction.
C. a correct and constant pitch indication.
D. a false nose-down indication.

Question: The gyro axis of an electric artificial horizon is tied to the:

A. **earth's vertical by two mercury level switches and two torque motors.**
B. earth's horizontal by four pendulous vanes.
C. earth's vertical by four pendulous vanes.
D. earth's horizontal by two mercury level switches and two torque motors.

The Earth gyro has a vertical spin axis and is kept in the vertical by two mercury switches sending signals to torque motors.

Question: A Stand-by-horizon or emergency attitude indicator:

A. Is fully independent of external energy resources in an emergency situation
B. **Contains** its own separate gyro
C. Only works of there is a complete electrical failure
D. Is automatically connected to the primary vertical gyro if the alternator fails

The stand-by AH has its own gyro but will require some form of power, either electricity or air.

Question: An aircraft is flying at flight level FL180 and Mach number 0.36. Its onboard thermometer reads TAT = - 5°C. Considering that the probe recovery coefficient is 0.84, the present weather conditions compared with the standard atmosphere are:

1. Standard
2. **Standard + 10°C**
3. Standard + 30°C
4. Standard + 20°C

Remember that the temperatures are in ^{o}K and the answers are ISA deviations.
ISA+10
TAT = SAT (1+ 0.2M²) SAT = TAT / (1+ 0.2 Kr M²) Kr is your recovery factor.
TAT is -5 C, which is 268.15 K. 268.15 / (1 + 0.2 x 0.84 x 0.36²) = 262.436 K ("SAT"), so 262.436 - 273.15 =
-10.7137 C ("SAT").
FL180..... 18 x 1.9812 = 35.6616 C of a drop, starting at 15 C, so in ISA is -20.6616.
Therefore we're about 10 C warmer than ISA.

Question: The operating principle of an "electronic" tachometer is to measure the:

A. rotation speed of an asynchronous motor energized by an alternator.
B. magnetic field produced by a dynamo or an alternator.
C. electromotive force (EMF) produced by a dynamo or an alternator.
D. **frequency of the electric impulse created by a notched wheel rotating in a magnetic field.** A phonic wheel.

Question: The operating principle of the "induction" type of tachometer is to measure the:

A. electromotive force (EMF) produced by a dynamo or an alternator.
B. **rotation speed of an asynchronous motor energized by an alternator.**
C. magnetic field produced by a dynamo or an alternator.
D. frequency of the electric impulse created by a notched wheel rotating in a magnetic field.

This is a question we have appealed with the CAA. The true induction tachometer uses a notched wheel (phonic wheel) This question was referring to a 3 phase AC tachometer. It is incorrect to refer to it as an induction tachometer.Although the squirrel cage motor that drives the indicator is known as an induction motor, that does not make it an induction tachometer.

Question: Concerning the directional gyro, the apparent drift rate due to the earth's rotation is a function of:

A. longitude.
B. magnetic longitude.
C. latitude and longitude.
D. **latitude.** Earth rate varies with the sine of latitude.

Question: The indications on a directional gyroscope are subject to errors. The most significant are: **1- apparent wander due to earth rotation. 2- apparent wander due to change of aircraft position. 3- gimballing errors.** 4- north change. **5- mechanical defects.** The combination regrouping the correct statement is:

Question: The indication of the directional gyro is valid only for a limited period of time. The causes of this inaccuracy are: **1 - rotation of the earth** 2 - longitudinal accelerations **3 - aircraft's moving over the surface of the earth** 4 - vertical components of of the earth's magnetic field The combination regrouping all the correct statements is: The direction indicator is affected by Earth rate and transport wander but not by accelerations or the Earth's magnetic field.

Question: If the tanks of your aircraft only contain water, the capacitor gauges indicate:

A. a mass equal to the mass of a same volume of fuel.
B. a mass of water different from zero, but inaccurate.
C. the exact mass of water contained in the tanks.
D. a mass equal to zero.

The unit is calibrated to measure the difference between the relative permittivity (capacitance) of fuel (about 2) and air (about 1) so it will be in error when covered in water which has a value of about 80.

Question: Considering a stabilised platform inertial system, this platform: **1 - can be servo-controlled in azimuth** 2 - is kept levelled during alignment phase only **3 - is always kept levelled** The combination that regroups all of the correct statements is: The platform is brought to the local horizontal and its alignment checked during the align mode and kept in the local horizontal in the NAV mode. A North aligned platform will be servo-controlled in azimuth to keep it pointing North.

Question: If the navigation function of an INS is inoperative and the control rotary switch is set to ATT, the output data of the INS is (are):

A. position and attitude.
B. position only.
C. attitude and ground speed.
D. attitude and heading.

Question: If the navigation function of an INS is inoperative and the control rotary switch is set to ATT, the output data of the INS are:

1. attitude and heading.
2. ground speed and heading.
3. attitude, TAS and heading.
4. attitude and ground speed.

Laser gyros mounted in the direction of the aircraft axis" and "accelerometers mounted in the direction of the aircraft axis" are partially correct but "accelerometers, and laser gyros, mounted in the direction of the aircraft axis" is more complete

Question: The full alignment of the stable platform of an Inertial Navigation System:

A. is only possible on the ground when the aircraft is at a complete stop
B. may be carried out at any time so long as an accurate position is inserted into the system.
C. may be carried out on the ground or when in straight and level flight
D. may be carried out during any phase of flight

The leveling and alignment of the platform relies on the platform being stationary. Gravity is used to level the platform and the North and East gyros detect the rotation of the Earth to define North and align the platform. Any motion of the platform would not allow this process.

Question: Inertial Reference System sensors include:

A. one east-west and one north-south gyro; one east-west and one north-south accelerometer
B. accelerometers, and laser gyros, mounted in the direction of the aircraft axis
C. laser gyros mounted in the direction of the aircraft axis
D. accelerometers mounted in the direction of the aircraft axis

Question: In an Inertial Reference System, accelerations are measured in relation to:

A. **aircraft axis** An IRS, or strap-down system, measures motion relative to the aircraft.
B. WGS 84 Earth co-ordinates
C. the direction of true north
D. local vertical at the aircraft position

Question: The principle of the Schuler pendulum is used in the design of a:

A. stabilised platform inertial system.
B. directional gyro control system.
C. strapdown inertial system.
D. artificial horizon control system.

Gyro stabilised platforms are designed to automatically overcome Schuler oscillations. Strapdown systems have their output corrected for Schuler oscillations but this is achieved by the computer software rather than by the design of the hardware.

Question: If the navigation function of an INS is inoperative, the back up mode if existing, used to operate the INS is:

A. the OFF mode which turns off the navigation mode but recovers the heading mode.
B. the ATT mode which supplies attitude and heading data.
C. the GS mode which supplies ground speed and heading data.
D. the ATT mode which allows to maintain pitch attitude only.

Question: When the rotary knob on the INS control panel is set to "NAV" mode, it is:

A. the navigation mode allowing use of all the functions of the system except attitude.
B. the alignment function in flight.
C. the navigation mode allowing use of all the functions of the system except heading.
D. the normal operating mode allowing use of all the functions of the system.

Question: While inertial platform system is operating on board an aircraft, it is necessary to use a device with the following characteristics, in order to keep the vertical line with a pendulous system:

A. with damping and a period of 84 seconds
B. without damping and a period of about 84 minutes
C. with damping and a period of about 84 minutes.
D. without damping and a period of about 84 seconds

Question: Should a Schuler platform be displaced from the horizontal, it would oscillate with a period of about:

A. 8 minutes.
B. 4 minutes.
C. 84 minutes.
D. 84 seconds.

Question: In an inertial navigation system, integrating once the speed in gives:

A. an average acceleration.
B. an instantaneous acceleration.
C. a distance travelled.
D. a position.

Question: An inertial Navigation System (INS) is:

1. a self contained system which operates without signals from the ground.
2. a radio navigation system.
3. a system which operates on the Doppler principle.

4. a hyperbolic navigation system.

Question: The data that needs to be inserted into an Inertial Reference System in order to enable the system to make a successful alignment for navigation is:

1. the navigation database reference.
2. the position of an in-range DME.
3. aircraft heading.
4. **aircraft position in latitude and longitude or airport ICAO identifier.**

Question: The data that needs to be inserted into an Inertial Reference Sysytem in order to enable the system to make a successful alignment of navigation is:

A. airport ICAO identifier
B. the position of an in-range DME
C. **aircraft position in latitude and longitude** The system specifically needs its latitude for alignment but start latitude and longitude for navigation.
D. aircraft heading

Question: The alignment phase of a gyro stabilized platform consists in:

1. aligning the platform axis with the aircraft axis (pitch, roll, yaw).
2. aligning the platform axis with the aircraft roll axis only.
3. aligning the platform axis with the aircraft pitch axis only.
4. **levelling the platform and determining its orientation.**

Question: In an inertial navigation system, the principle used to obtain the change in speed is:

1. single integration of position according to time.
2. **single integration of acceleration according to time.**
3. double integration of position according to time.
4. double integration of acceleration according to time.

Question: The characteristics of the earth which are being used during the alignment of an INS platform are:

1. longitude and gravity.
2. earth magnetic field and earth rotation.
3. earth rotation and longitude.
4. **earth rotation and gravity.**

Question: In a stabilised platform inertial system, the accelerations are measured in a trihedron which is: (NB : "aircraft trihedron" = pitch, roll and yaw axis)

A. fixed in absolute space.
B. merged with only two axis of the aircraft trihedron : the roll axis and the pitch axis.
C. **free from the aircraft trihedron.**
D. merged with the aircraft's triehedron.

Question: The flight director command bars provide the pilot with corrections to apply to:

A. roll attitude only.
B. **pitch and/or roll attitude.**
C. pitch and/or roll attitude, and yaw.
D. pitch attitude only.

Question: The operating principle of an inertial system consists in:

A. measuring the position of the aircraft and performing integrations to elaborate the ground speed and acceleration.
B. **measuring the acceleration of the aircraft and performing integrations to elaborate the ground speed and the position**.
C. measuring the earth rotation and performing integrations to elaborate the aircraft ground speed and position.
D. measuring the acceleration, speed and position of the aircraft.

Question: To obtain the instantaneous speed from the accelerations:

A. it is necessary to integrate the acceleration once in time, and to know the initial position only.
B. integrating the acceleration once in time is sufficient.
C. **it is necessary to integrate the acceleration once in time, and to know the initial speed only**.
D. it is necessary to integrate the acceleration once in time, and to know the initial speed and the initial position.

A. İt is necessary to integrate twice the acceleration in time, and to know the initial position only.
B. it is necessary to integrate twice the acceleration in time, and to know the initial speed only.
C. integrating twice acceleration in time is sufficient.
D. it is necessary to integrate twice the acceleration in time, and to know the initial position and the initial speed.

The INS measures accelerations North/South and accelerations East/West which go through two integrations to give distance travelled North/South and East/West. From initial position and distances travelled North/South and East/West it computes present position.

Question: If the acceleration of an aircraft is zero, its velocity:

A. is always zero.
B. will increase.
C. will decrease.
D. is constant.

The IRS in the align mode first defines the vertical using the accelerometers. It then measure Earth rate with the laser gyros in order to define North and compute its latitude which it compares with the latitude entered by the pilot.

Question: The alignment sequence of an IRS consists of: **1 - searching for the local vertical 2 - searching for the true north 3 - searching for the latitude** 4 - searching for the longitude 5 - comparison between the computed longitude and the one entered by the pilot **6 - comparison between the computed latitude and the one entered by the pilot** The combination that regroups all of the correct statements is:

Question: Considering a stabilised platform inertial system: **1 - the rate gyros and the accelerometers are mounted on the same platform** 2 - the rate gyros and the accelerometers are mounted on two separated platforms 3 - the principle of operation requires at least 2 2 rate gyros **4 - the principle of operation requires at least 2 accelerometers** The combination that regroups all of the correct statements is: The system require at least three rate integrating gyros and at least two accelerometers mounted on the same platform.

Question: To obtain the instantaneous position from the accelerations, it is necessary to**: 1 - integrate twice the acceleration in time 2 - know the initial position 3 - know the initial speed** The combination that regroups all of the correct statements is:

Question: To obtain the instantaneous speed from the accelerations, it is necessary to: **1 - integrate once the acceleration in time** 2 - know the initial position **3 - know the initial speed** The combination that regroups all of the correct statements is: The first integration of acceleration with respect to time gives change of speed. Apply this to the initial speed and you have instantaneous speed.

Question: In an inertial navigation system, the principle used to obtain position is: 1 - single integration of acceleration according to time**. 2 - double integration of acceleration according to time. 3 - single integration of speed according to time.** 4 - double integration of speed according to time. The combination that regroups all of the correct statements is: Position is obtained by applying distance travelled to initial position. To calculate distance travelled the first integration of acceleration with respect to time gives speed and the second integration converts speed to distance travelled.

Question: The drift of the azimuth gyro on an inertial unit induces an error in the position given by this unit. "t" being the elapsed time. The total error is:

A. **proportional to t** As "t" gets bigger the error gets bigger: they are directly proportional to each other.
B. proportional to t/2
C. sinusoidal
D. proportional to the square of time, t^2

Question: Which one of the following sensors/systems is self-contained?

A. VOR/DME
B. **Inertial Navigation System**
C. Basic RNAV system
D. GPS

Question: The platform of an inertial navigation system (INS) is maintained at right angles to the local vertical by applying corrections for the effects of:

A. movement in the yawing plane, secondary precession and pendulous oscillation
B. gyroscopic inertia, earth rotation and real drift
C. vertical velocities, earth precession, centrifugal forces and transport drift
D. **aircraft manoeuvres, earth rotation, transport wander and coriolis**

Corrections are not applied for the effects of secondary precession, vertical velocities or real drift of the gyros which rules out movement in the yawing plane, secondary precession and pendulous oscillation, vertical velocities, earth precession, centrifugal forces and transport drift and gyroscopic inertia, earth rotation and real drift. Corrections are made for the effects of aircraft manoeuvres (the platform is always kept in the local horizontal), for apparent wander of the gyros (Earth rate and transport wander) and for the effects of coriolis on the accelerometers.

Question: The term drift refers to the wander of the axis of a gyro in:

A. any plane
B. the vertical and horizontal plane
C. **the horizontal plane** Drift = wander in the horizontal plane. Topple = wander in the vertical plane.
D. the vertical plane

Question: What additional information is required to be input to an Inertial Navigation System (INS) in order to obtain an W/V readout?

A. **TAS** The INS knows heading, track and groundspeed.
B. IAS
C. Mach Number
D. Altitude and OAT

Question: The purpose of the TAS input, from the air data computer, to the Inertial Navigation System is for:

A. position update in Navigation mode
B. the calculation of drift
C. position update in Attitude mode
D. the calculation of wind velocity

Question: A pilot accidently turning OFF the INS in flight, and then turns it back ON a few moments later. Following this incident:

A. no useful information can be obtained from the INS
B. everything returns to normal and is usable
C. the INS is usable in NAV MODE after a position update
D. it can only be used for attitude reference

Question: Which of the following statements concerning the alignment procedure for Inertial Navigation Systems(INS)/Inertial Reference Systems (IRS) at mid-latitudes is correct?

A. INS/IRS can only be aligned in NAV mode
B. INS/IRS can be aligned in either the ALIGN or NAV mode
C. INS/IRS can only be aligned in the ALIGN mode
D. INS/IRS can be aligned in either the ALIGN or ATT mode

If NAV is selected on the Mode Selector they equipment will automatically go through the levelling and alignment procedure (ALIGN) and will switch the NAV as soon as an adequate degree of levelling and alignment is reached.

uestion: Which of the following statements concerning the operation of an Inertial Navigation System (INS)/Inertial Reference System (IRS) is correct?

A. NAV mode must be selected when the alignment procedure is commenced
B. NAV mode must be selected on the runway just prior to take-off
C. NAV mode must be selected prior to the loading of passengers and/or freight
D. NAV mode must be selected prior to movement of the aircraft off the gate

Question: The sensors of an INS measure:

A. velocity
B. acceleration
C. precession
D. the horizontal component of the earth's rotation

Question: An aircraft equipped with an Inertial Navigation System (INS) flies with INS 1 coupled with autopilot 1. Both inertial navigation systems are navigating from way-point A to B. The inertial systems' Central Display Units (CDU) shows: - XTK on INS 1 = 0, - XTK on INS 2 = 8L, (XTK = cross track) From this information it can be deduced that:

A. only inertial navigation system No. 2 is drifting
B. at least one of the inertial navigaton systems is drifting
C. only inertial navigation system No. 1 is drifting
D. the autopilot is unserviceable in NAV mode

The two inertial systems are completely independent and one or both may be in error. This could only be ascertained by fixing the aircraft's position accurately and comparing the two INS derived positions with the fix position.

Question: After alignment of the stable platform of an Inertial Navigation System, the output data from the platform is:

A. acceleration north/south and east/west, attitude and true heading
B. latitude, longitude and true heading

Outputs from the platform are accelerations N/S & E/W, heading and attitude. Latitude and longitude are resolved by the INS computer. Note "acceleration north/south and east/west, attitude and true heading" is a more complete answer than "acceleration north/south and east/west and true heading."

C. latitude, longitude and attitude
D. acceleration north/south and east/west and true heading

Question: After alignment of the stable platform of the Inertial Navigation System, the output data from the INS computer to the platform is:

A. latitude and longitude
B. rate corrections to the gyros
C. attitude
D. accelerations from the accelerometers

Question: Which of the following lists the order of available selections on the Mode Selector switches of a 737-400 Inertial Reference System?

A. OFF - ALIGN - ATT - NAV
B. OFF - STBY - ALIGN - NAV
C. OFF - ALIGN - NAV - ATT
D. OFF - ON - ALIGN - NAV

The MSU on page 6.10 is for an inertial navigation system (INS); a 'stable table' system using rate integrating gyros. The 737-400 system uses an inertial reference system (IRS); a 'strapped-down' system using laser gyros. Laser gyro systems do not have a STBY mode.

Question: The mode selector of an inertial unit comprises the OFF - STBY - ALIGN - NAV - ATT positions: 1 - on "STBY", the unit aligns on the local geographic trihedron; 2 - the "ATT" position is used in automatic landing (mode LAND); 3 - on "NAV" the coordinates of the start position can be entered; **4 - the platform is levelled before azimuth alignment;** 5 - in cruise, the unit can only be used in "NAV" mode. The combination regrouping all the correct statements is:

Question: Gyrocompassing of an inertial reference system (IRS) is accomplished with the mode selector switched to:

A. ATT/REF
B. ON
C. STBY
D. ALIGN

'Gyro compassing' is the term used to describe a system which uses a gyro to detect the direction of rotation of the Earth in order to measure true directions relative to the Earth. This is how the inertial system knows which way the aircraft is pointing (heading) and which way it is travelling (track).

Question: On the INS control panel, the rotary knob can be selected to OFF, NAV or ATT positions. The correct statement is:

A. **NAV is the normal system setting; the ATT position is the back up position in case of failure of the navigation function.** NAV (= navigation) is the normal selection but certain failures will mean that the system is unusable for navigation purposes but it will still provide attitude information on selection of ATT.
B. ATT is the normal system setting.
C. ATT is the normal system setting; the NAV position inhibits the attitude data.
D. NAV is the normal system setting; the OFF position is the back up position in case of failure of the navigation function.

Question: In an Inertial Navigation System (INS), Ground Speed (GS) is calculated:

A. from TAS and W/V from Air Data Computer (ADC)
B. from TAS and W/V from RNAV data
C. by integrating gyro precession in N/S and E/W directions respectively
D. by integrating measured acceleration

Question: The resultant of the first integration of the output from the east/west accelerometer of an inertial navigation system (INS) in NAV MODE is:

A. change of longitude
B. velocity along the local parallel of latitude

C. departure
D. vehicle longitude

Question: The resultant of the first integration from the north/south accelerometer of an inertial navigation system (INS) in the NAV MODE is:

A. change latitude
B. groundspeed
C. latitude
D. velocity along the local meridian

Question: The principle of 'Schuler Tuning' as applied to the operation of Inertial Navigation Systems/ Inertial Reference Systems is applicable to:

A. only to 'strapdown' laser gyro systems
B. both gyro-stabilised platform and 'strapdown' systems
C. both gyro-stabilised and laser gyro systems but only when operating in the non 'strapdown' mode
D. only gyro-stabilised systems

uestion: Double integration of the output from the east/west accelerometer of an inertial navigation system (INS) in the NAV MODE give:

A. velocity east/west
B. vehicle longitude
C. distance east/West
D. distance north/south

The first integration converts acceleration to velocity (speed) and he second integration converts speed into distance travelled East/West (departure).

Question: During the initial alignment of an inertial navigation system (INS) the equipment:

A. will not accept a 10° error in initial latitude but will accept a 10° error in initial longitude
B. will accept a 10° error in initial latitude and initial longitude
C. will not accept a 10° error in initial latitude or initial longitude
D. will accept a 10° error in initial latitude but will not accept a 10° error in initial longitude

Question: Which of the following statement is correct concerning gyro-compassing of an inertial navigation system (INS)?

A. Gyro-compassing of an INS is possible in flight because it can differentiate between movement induced and misalignment induced accelerations.
B. Gyro-compassing of an INS is possible in flight because it cannot differentiate between movement induced and misalignment induced accelerations.
C. Gyro-compassing of an INS is not possible in flight because it can differentiate between movement induced and misalignment induced accelerations.
D. Gyro-compassing of an INS is not possible in flight because it cannot differentiate between movement induced and misalignment induced accelerations.

Question: With reference to an inertial navigation system (INS), the initial great circle track between computer inserted waypoints will be displayed when the control display unit (CDU) is selected to:

A. HDG/DA
B. XTK/TKE
C. DSRTK/STS
D. TK/GS

HDG/DA displays heading and drift angle, TK/GS displays instantaneous track made good and groundspeed and XTK/TKE displays distance left/right of planned track and tracking error. DSRTK/STS displays the required track between waypoints and a system serviceability code.

Question: The automatic flight control system is coupled to the guidance outputs from an inertial navigation system. Which pair of latitudes will give the greatest difference between initial track read-out and the average true course given, in each case, a difference of longitude of 10°?

A. 30°S to 30°N
B. 30°S to 25°S
C. 60°N to 50°N
D. 60°N to 60°N

Question: ATT Mode of the Inertial Reference System (IRS) is a back-up mode providing:

A. only attitude and heading information
B. altitude, heading and position information
C. navigation information
D. only attitude information

The ATT mode is normally a reversion mode after the failure of the NAV mode. The three laser gyros are still capable of giving attitude information (pitch, roll and yaw) and, once the IRS has had heading confirmed, it will give heading information.

Question: Which of the following statements concerning the loss of alignment by an Inertial Reference System (IRS) in flight is correct?

A. The navigation mode, including present position and ground speed outputs, is inoperative for the remainder of the flight
B. It is not usable in any mode and must be shut down for the rest of the flight
C. The IRS has to be coupled to the remaining serviceable system and a realignment carried out in flight
D. The mode selector has to be rotated to ATT then back through ALIGN to NAV in order to obtain an in-flight realignment

Question: The accuracy of the altitude computed by a stand alone inertial system:

A. decreases proportionally with flight time.
B. is poor at the beginning of the flight.
C. decreases exponentially with flight time.
D. is bounded.

The IRS provides attitude information, position, and information about the motion of the aircraft including heading, track, drift and ground speed. It does not compute TAS.

Question: The output data of an IRS include: **1 - present position (lat, long)** 2 - TAS **3 - attitude 4 - ground speed** The combination regrouping all the correct statements is:
Question: The output data of an IRS include: 1 - angle of attack 2 - altitude **3 - ground speed** The combination regrouping all the correct statements is:
Question: The output data of an IRS include: 1 - satellites status 2 - altitude **3 - drift angle 4 - present position (lat, long)** The combination regrouping all the correct statements is:
Question: The output data of an IRS include: 1 - number of satellites tracked 2 - mach number **3 - ground speed 4 - true track** The combination regrouping all the correct statements is:
Question: The output data of an IRS include: **1 - true heading 2 - drift angle 3 - ground speed** 4 - Mach number The combination regrouping all the correct statements is:
Question: The output data of an IRS include: **1 - true track 2 - attitude** 3 - number of satellites tracked **4 - true heading** The combination regrouping all the correct statements is:
Question: The output data of an IRS include: 1 - radio height **2 - attitude 3 - true track** 4 - static pressure The combination regrouping all the correct statements is:
Question: Concerning an IRS: 1 - the aircraft may be moved during the alignment **2 - the aircraft must not be moved during alignment** 3 - exceptionaly, the alignment can be done in flight The combination regrouping all the correct statements is:
Question: The position data (lat, long) computed by an IRS can be used by the: 1- yaw damper **2- FMS** 3- radio altimeter The combination regrouping all the correct statements is:

Question: The drift of the gyroscopes of a stand alone inertial system:

A. induces a bounded position error.

B. **is the main error source.** Real drift of the gyros is the major source of error in stabilised platform inertial systems. The error increases with flight time and this is referred to as an unbounded error.
C. induces a position error that decreases along the flight.
D. is not an error source.

Question: Comparing the radio navigation system and the inertial navigation system: **1 - the radio position is accurate when in DME range** 2 - the radio position may be obtained whatever the position on the earth **3 - the inertial position may be obtained whatever the position on the earth** The combination regrouping all the correct statements is:

Question: In an inertial navigation system, to know the distance travelled, it is necessary to**: 1 - integrate once the speed in time** 2 - to know the initial position 3 - to know the initial speed The combination that regroups all of the correct statements is:

Question: Considering a strapdown inertial system, the operating principle requires the use of at least:

A. 3 laser gyros and 3 accelerometers.
B. 3 laser gyros and 2 accelerometers.
C. 2 laser gyros and 2 accelerometers.
D. 2 laser gyros and 3 accelerometers.

Question: Considering a stabilised platform inertial system, the principle of operation requires the use of at least: 'Stable table' systems require three rate integrating gyros and two accelerometers.

A. 2 rate gyros and 2 accelerometers.
B. 3 rate gyros and 4 accelerometers.
C. 2 rate gyros and 3 accelerometers.
D. 3 rate gyros and 2 accelerometers.

Question: What is the name given to an Inertial Reference System (IRS) which has the gyros and accelerometers as part of the unit's fixture to the aircraft structure?

A. Ring laser
B. Solid state
C. Strapdown
D. Rigid

Question: Compared with a stabilised platform inertial system, a strapdown inertial system: 1 - can align while the aircraft is moving **2 - has a quicker alignment phase 3 - is more reliable in time** The combination that regroups all the correct statements is:

Question: Compared with a stabilised platform inertial system, a strapdown inertial system: 1 - has a longer alignment phase in time **2 - has a shorter alignment phase in time 3 - is more reliable in time**. 4 - is less reliable in time The combination that regroups all of the correct statements is:

Question: The alignment time, at mid-latitudes, for an Inertial Reference System using laser ring gyros is approximately:

A. 5 MIN
B. 10 MIN
C. 20 MIN
D. 2 MIN

Question: The time for a normal alignment (not a quick alignment) of a strapdown inertial system is:

A. 15 to 20 minutes.
B. less than 1 minute.
C. 1 to 2 minutes.
D. 3 to 10 minutes.

Question: Which of the following statements concerning the aircraft positions indicated on a triple fit Inertial Navigation System (INS)/ Inertial Reference System (IRS) on the CDU is correct?

A. The positions will only differ if an error has been made when inputting the present position at the departure airport
B. The positions will be the same because they are an average of three different positions
C. The positions will only differ if one of the systems has been decoupled because of a detected malfunction
D. The positions are likely to differ because they are calculated from different sources

Question: The position error of a stand alone inertial system, is approximately:

A. 0.01 to 0.2 NM per hour.

B. 8 to 10 NM per hour.

C. 6 to 8 NM per hour.

D. 0.5 to 2 NM per hour.

Question: An inertial reference and navigation system is a "strapdown" system when:

A. only the gyros, and not the accelerometers, are part of the unit's fixture to the aircraft structure.
B. gyros and accelerometers need satellite information input to obtain a vertical reference.
C. gyros and accelerometers are mounted on a stabilised platform in the aircraft.
D. the gyroscopes and accelerometers are part of the unit's fixture to the aircraft structure.

Question: The elements which take part in the local vertical alignment of an inertial strap-down unit are:

A. the accelerometers. The accelerometers detect gravity to define the vertical in ALIGN.
B. the gyroscopes.
C. the flow inductors.
D. the accelerometers and gyroscopes.

Question: Compared with a stabilised platform inertial system, a strapdown inertial system: 1 - is more accurate but less reliable in time **2 - measures the accelerations in a trihedron which is fixed regarding to the aircraft trihedron** 3 - doesn't need any initial position to be inserted by the flight crew The combination that regroups all of the correct statements is:

Question: The alignment of a strapdown inertial system consists in:

A. positioning the platform relative to the local vertical and true north.
B. positioning the gyroscopes and accelerometers relative to the fuselage axis.
C. measuring the earth rotation and local gravitation to position the reference trihedron.
D. positionning the accelerometers.

Question: The position error of a stand alone inertial system:

- **A. increases along the time.**
- B. increases up to 2 NM due to the drift error of the gyroscopes, then stabilizes.
- C. remains constant.
- D. is sinusoidal.

Question: The position error of a stand alone inertial system:

- A. constant along the flight with an accuracy depending on the accuracy of the accelerometers.
- B. large a few minutes after initialisation and reduces along the flight.
- C. small and constant along the flight.
- **D. small a few minutes after initialisation and increases along the flight.**

Question: The attitude data computed by an IRS can be used by the:

- A. TCAS.
- B. GPWS.
- C. stall warning system.
- **D. auto pilot system.**

Question: If the position data (lat, long) is no longer computed an IRS, the affected system(s) is (are):

- A. the TCAS.
- B. the FMS and the TCAS.
- ***C. the FMS.***
- D. the ADC and the TCAS.

TCAS and ADC don't need position. The FMS doesn't need position but if the IRS stops computing position it will also stop computing information about the motion of the aircraft.

Question: The sideslip indication diplayed on the PFD (Primary Flight Display) is generated by:

- A. the yaw damper.
- **B. the inertial system.**
- C. the stall protection system.
- D. the Automatic Flight Control System (AFCS).
- E. ADC.
- F. compass.

Question: The Primary Flight Display (PFD) displays information dedicated to:

- A. engines and alarms.
- **B. piloting.**
- C. systems.
- D. weather situation.

Question: In order to know in which mode the auto-throttles are engaged, the crew will check the:

- **A. PFD (Primary Flight Display)** PFD or ADI.
- B. throttles position.
- C. ND (Navigation Display).
- D. TCC (Thrust Control Computer).

Question: The Primary Flight Display (PFD) of an EFIS equipped aircraft can display information relative to the following conditions:

A. pressurization failure, altitude capture, TCAS resolution advisory.
B. altitude capture, braking system, autopilot and flight director mode changes.
C. **altitude capture, TCAS resolution advisory, autopilot and flight director mode changes**.
D. low engine oil pressure, terrain alerts, windshear detection.

Question: The Primary Flight Display (PFD) of an EFIS equipped aircraft displays the following parameters: **1- auto-throttle modes 2- attitude 3- vertical speed 4- flight director command bars** The combination that regroups all of the correct statements is:

Question: The Primary Flight Display (PFD) of an EFIS equipped aircraft displays the following parameters: **1- radio height 2- IAS 3- Localizer and Glide slope deviation pointers 4- flight director modes 5- autopilot modes** The combination that regroups all of the correct statements is:

Question: The Primary Flight Display (PFD) of an EFIS equipped aircraft displays the following parameters:

A. attitude, heading, IAS, navigation map in Plan layout mode.
B. attitude, heading, altitude, systems information.
C. IAS, attitude, altitude, heading.
D. altitude, attitude, heading, engine parameters.

Question: The source of the data displayed on the Primary Flight Display (PFD) and Navigation Display (ND) are: **1- Inertial Navigation System 2- FMS 3- Weather Radar 4- Radio altimeter 5-ADC** The combination that regroups all of the correct statements is:

Question: The energy required to operate a strapdown inertial system is supplied by:

A. the bleed air system.
B. the electrical system.
C. a dedicated pneumatic system.
D. the hydraulic system.

Question: In a strapdown inertial system, the accelerations are measured in a trihedron which is fixed regarding to the:

A. aircraft's trihedron (pitch, roll and yaw axis).
B. earth's trihedron (X, Y, Z)
C. earth's trihedron (longitude, latitude).
D. absolute space.

Question: The accelerometers of a strap-down Inertial Reference System are in line with:

A. the local vertical and the local meridian.
B. the geographical directions.
C. the local meridian and parallel.
D. the aircraft axes.

Question: A strapdown inertial system consists in:

A. a platform free of the aircraft chassis which includes gyroscopes and accelerometers.
B. a platform attached to the aircraft chassis and which includes gyroscopes and accelerometers.
C. gyroscopes attached to the aircraft chassis and accelerometers which are not.
D. accelerometers attached to the aircraft chassis and gyroscopes which are not.

Question: The navigation precision of a stand alone inertial system decreases along the flight, due to:

A. the accelerations of the aircraft.
B. the motion of the aircraft.
C. the drift of the gyroscopes.
D. the meteorological conditions.

Real drift of the gyros is the major source of error in stabilised platform inertial systems. The error increases with flight time and this is referred to as an unbounded error.

Question: The alignment of a gyro stabilized inertial platform consists in positioning the platform relative to:

A. the vertical axis and true north.
B. the pitch axis only.
C. the roll axis only.
D. the pitch and roll axis.

The INS (and IRS) uses gravity to define horizontal/vertical. It also uses the detection of Earth rotation and latitude to define alignment.

Question: In order to align an IRS, it is required to insert the local geographical coordinates. This enables the IRS to**: 1 - compare the computed latitude with the one entered by the pilot** 2 - compare the computed longitude with the one entered by the pilot **3 - know the longitude** The combination that regoups all of the correct statements is: The IRS needs to know latitude and longitude of the start position but uses latitude to check alignment in azimuth from gyro Earth rate.

Question: In order to align an inertial reference system (IRS), it is required to insert the local geographical coordinates. This enables the IRS to: The IRS must have its position confirmed in order to get itself aligned correctly.

A. compare the latitude it finds with that entered by the operator.
B. initialise the FMS flight plan.
C. compare the longitude it finds with that entered by the operator.
D. find true north.

Question: Compared with a conventional gyro, a laser gyro :

A. has a longer life cycle
B. is influenced by temperature
C. has a fairly long starting cycle
D. consumes a lot of power

Question: The principle of a laser gyro is based on: 2 light beams travelling a different distance in the same time because of rotation of the device. Rate of rotation is proportional to phase difference.

A. frequency difference between two laser beams rotating in opposite direction.
B. a gyroscope associated with a laser compensating for gimballing errors.
C. two rotating cavities provided with mirrors.
D. a gyroscope associated with a laser compensating for apparent wander due to the rotation of the earth.

Question: Compared with a conventional gyro, a laser gyro:

A. is influenced by temperature.
B. consumes much more power.
C. consumes a lot of power.
D. is much more cumbersome.

The RLG weighs 26kg and sits in a box 10" x 8" x 20". This is almost exactly the same size as the gyro box for the old carousel INS. I wouldn't say it was either more or less cumbersome. We'll appeal it if it comes up.

Question: Which of the following statements, which compares an Inertial Reference System that utilises Ring Laser Gyroscopes (RLG) instead of conventional gyroscopes, is completely correct?

A. There is little or no 'spin up' time and it does not suffer from 'lock in' error
B. The platform is kept stable relative to the earth mathematically rather than mechanically but it has a longer 'spin up' time
C. It does not suffer from 'lock in' error and it is insensitive to gravitational ('g') forces
D. There is little or no 'spin up' time and it is insensitive to gravitational ('g') forces

A strapdown system does not have a gyro stabilised platform and the laser gyros operate as soon as power is applied (i.e. no 'spin up' time as there is with rate integrating gyros). Because motion is sensed relative to the aircraft and in three dimensions gravity does not affect strapdown systems.

Question: The output data of an IRS are: **1 - true track** 2 - Mach number **3 - present position (lat, long) 4 - true heading 5 - attitude** The combination regrouping all the correct statements is:

Question: The output data of an IRS include: **1 - attitude** 2 - altitude **3 - present position (lat, long)** 4 - static air temperature The combination regrouping all the correct statements is:

The IRS provides attitude information, position, and information about the motion of the aircraft. It does not compute altitude or outside air temperature.

Question: The output data of an IRS include: **1 - present position (lat, long)** 2 - total pressure 3 - static air temperature **4 - true heading** The combination regrouping all the correct statements is:

Question: A ring laser gyro can measure:

A. accelerations about its sensitive axis.
B. rotation about its sensitive axis.
C. accelerations in all direction.
D. rotation in all directions.

Question: A laser gyro can measure:

A. an acceleration and a speed.
B. a rotation motion.
C. an acceleration.
D. an acceleration and a rotation motion.

Question: A ring laser gyro is:

A. a device which measures angular movements.
B. a device which measures the earth rate precession.
C. used for stabilising the INS platform.
D. an optical accelerometers.

Question: Considering a strapdown inertial system, the IRU (Inertial Reference Unit) measures:

A. angular accelerations only.
B. angular rates only.
C. linear accelerations only.
D. **accelerations and angular rates.** The IRS measures both angular and linear accelerations.

Question: The alignment time of a strapdown inertial system takes longer time when the aircraft is:

A. at a location where the magnetic variation is greater than 15 degrees.
B. close to the equator.
C. **at a high latitude.** Alignment is achieved by 'gyro compassing'; i.e. detecting the rotation of the Earth. This is easier near the Equator than at the Poles.
D. at a high longitude.

Question: An inertial navigation system:

A. can only operate when interfacing with the radionavigation equipments.
B. can only operate when interfacing with the GPS equipment.
C. can only operate when communicating with ground installations.
D. can operate as stand alone equipment without any interface with other navigation equipments.

Question: In an inertial navigation system, to know the distance travelled:

A. integrating once the speed in time is sufficient.
B. it is necessary to integrate once the speed in time, and to know the initial speed only.
C. it is necessary to integrate once the speed in time, and to know the initial speed and the initial position.
D. it is necessary to integrate once the speed in time, and to know the initial position only.

Question: In an inertial navigation system, the integration process: 1 - amounts to making a time division. **2 - amounts to making a time multiplication.** 3 - enable to get accelerations from position. **4 - enable to get position from accelerations.** The combination that regroups all of the correct statements is:

The INS computes distance travelled from the double integration of measured acceleration. The distance travelled is applied to the initial position in order to calculate the present position.

:First integration: change of speed = acceleration x time Second integration: distance = speed x time.

Question: In a inertial navigation system, the integration process makes a:

A. distance division.
B. time division.
C. time multiplication. Acceleration x time = change of speed. Speed x time = distance travelled.
D. distance multiplication.

Question: The alignment of an inertial system can be sucessfully performed:

A. in all phases of flight.
B. in all phases of flight outside areas of turbulence.
C. when the aircraft is taxiing.
D. when the aircraft is stationary.

Question: One of the errors inherent in a ring laser gyroscope occurs at low input rotation rates tending towards zero when a phenomenon known as "lock-in" is experienced. What is the name of the technique, effected by means of a piezo-electric motor, that is used

A. beam lock
B. dither The vibration induced by the piezo-electric motor is called 'dither'
C. zero drop
D. cavity rotation

Question: In an autopilot system, the functions consisting in controlling the path of the aircraft are the:

A. inner loop functions.
B. attitude functions.
C. guidance functions.
D. stability functions.

Question: The computer of the autopilot system uses, among others, input signals from the: **1- ADC 2- attitude reference System 3- ILS receiver 4- mode control panel** The combination that regroups all of the correct statements is:

Question: The components of an autopilot system are the: **1- actuators 2- mode control panel 3- mode annunciator panel 4- computer** The combination that regroups all of the correct statements is:

Question: The automatic synchronisation function of an autopilot control system: 1 - operates only when the autopilot is engaged 2 - prevents the aircraft's control system from jerking when disengaging the autopilot 3 - enables the cancellation of the rudder control signals **4 - prevents the aircraft's control system from jerking when engaging the autopilot** The combination that regroups all of the correct statements is:

Question: The vertical flight path modes of an autopilot system are**: 1 - FMS vertical navigation 2 - Flight path angle hold 3 - Glide slope intercept and track 4 - Altitude hold** The combination that regroups all of the correct statements is:

Question: The vertical flight path modes of an autopilot system are: 1- Pitch attitude hold **2- Altitude hold** 3- Track hold **4- Glide slope intercept and track** The combination that regroups all of the correct statements is:

Question: The lateral flight path modes of an autopilot system are: **1 - Heading hold** 2 - Speed hold **3 - FMS lateral navigation** 4 - TAS hold **5 - Localizer intercept and track** The combination that regroups all of the correct statements is:

Question: In an autopilot system, the flight path modes are: 1 - Pitch attitude hold **2 - IAS and Mach number hold 3 - Altitude hold 4 - Glide slope intercept and track** The combination regrouping all the correct statements is:

Question: The computer of the autopilot system uses, among others, input signals from the: **1- attitude reference system** 2- mode annunciator panel **3- ADC 4- mode control panel** The combination that regroups all of the correct statements is:

Question: The components of an autopilot system are the: **1- actuators 2- mode control panel** 3- EFIS control panel **4- mode annunciator panel** The combination that regroups all of the correct statements is:

Question: In an autopilot system, the basic stabilisation modes are: 1 - altitude hold **2 - pitch attitude hold 3 - roll attitude hold** 4 - IAS hold The combination regrouping all the correct statements is:

Question: In an autopilot system, the function consisting in controlling the movements around the center of gravity of the aircraft is provided by the:

- **A. inner loop systems.**
- B. synchronization system.
- C. outer loop systems.
- D. Flight Management System (FMS).

Question: In an autopilot system:

- A. the outer loops provide the stability functions and the inner loops provide the guidance functions.
- **B. the inner loops provide the stability functions and the outer loops provide the guidance functions.**
- C. the outer loops provide the stability functions only.
- D. the outer loops provide the stability functions and the inner loops provide the guidance functions.

Question: An autopilot system: The minimum requirement for an autopilot is to stabilize the aircraft in pitch and roll.

- A. must provide automatic take off functions.
- B. must provide at least aircraft guidance functions.
- C. may provide automatic take off functions.
- **D. must provide at least aircraft stabilisation functions.**

Question: Automatic Flight Control System (AFCS) parallel actuator position is:

- **A. passed to the pilot via control stick position.**
- B. not displayed in the cockpit due to short duration of operation.

C. displayed to the pilot by movement on the ADI only.
D. displayed in the cockpit as a function of input and output signals.

Question: A closed loop control system in which a small power input controls a much larger power output in a strictly proportionate manner is known as:

A. **a servomechanism.** The correct terminology in this context is 'servomechanism', not 'amplifier' because the system could be electric or hydraulic.
B. an autopilot.
C. an amplifier.
D. a feedback control circuit.

Question: In a transport airplane, an autopilot comprises, in addition to the mode display devices, the following fundamental elements : 1- Airflow **valve 2- Sensors 3- Comparators 4- Computers 5- Amplifiers 6- Servo-actuators** The combination regrouping all the correct statements is:

Question: When an aircraft, operating in the VOR coupled mode, approaches the "cone of confusion" over a VOR station, the roll channel of the autopilot:

A. is temporarily disconnected.
B. temporarily switches over to the heading mode.
C. is damped by a trim input signal from the lateral trim system.
D. remains always coupled to the selected VOR radial.

Question: During large control inputs from an automatic flight control system (AFCS), the control stick in the cockpit is moved to inform the pilot of the action. This is:

A. achieved by the flight director.
B. a false statement; the information is displayed to the pilot via the ADI, HSI and AFCS controller.
C. achieved by a parallel actuator.
D. achieved by a series actuator.

Question: During a Category II automatic approach, the height information is supplied by the :

A. altimeter.
B. encoding altimeter.
C. radio altimeter.
D. GPS (Global Positioning System).

Question: From a flight mechanics point of view, the "guidance" functions of a transport airplane autopilot consist in:

A. monitoring the movements of the aerodynamic centre in the three dimensions of space (path).
B. monitoring the movements of the centre of gravity in the three dimensions of space (path).
C. stabilizing and monitoring the movements around the centre of gravity.
D. stabilizing and monitoring the movements around the aerodynamic centre.

Question: The command bars of a flight director are generally represented on an:

A. ILS (Instrument Landing System)
B. ADI (Attitude Director Indicator)
C. HSI (Horizontal Situation Indicator)
D. RMI (Radio Magnetic Indicator)

Question: An autopilot capable of holding at least altitude and heading mode is compulsory:

A. on airplanes over 5.7 t.
B. on multipilot airplanes.
C. for VFR and IFR flights with only one pilot.
D. for IFR or night flights with only one pilot.

Question: When being engaged, and without selecting a particular mode, an automatic pilot enables:

1. all aeroplane piloting and guidance functions except maintaining radio-navigation course lines.
2. aeroplane piloting and guidance functions.
3. a constant speed on track, wings horizontal.
4. **aeroplane stabilisation with attitude hold or maintaining vertical speed and possibly automatic trim.**

Question: When the autopilot is engaged, the role of the automatic trim is to:

1. block the elevator and pilot the aircraft only via the trim tab actuator or the horizontal stabiliser.
2. synchronize the longitudinal loop
3. react to altitude changes in Altitude Hold mode
4. **relieve the A.P. servo motor and return the aircraft in-trim at A.P. disconnect**

Question: In an auto-pilot slaved powered control circuit, the system which ensures synchronisation:

1. prevents uncommanded surface deflection when the automatic pilot is disengaged.
2. intervenes only when the automatic pilot has been engaged.
3. is inhibited when the automatic pilot is engaged.
4. **can itself, when it fails, prevent the automatic pilot from being engaged.**

Question: On a modern transport category aeroplane, the engagement of the automatic pilot is checked on the display of:

1. the ND (Navigation Display).
2. the ECAM (Electronic Centralized Aircraft Monitoring) left screen .
3. the ND (Navigation Display) of the pilot in command.
4. **the PFD (Primary Flight Display).**

Question: When engaged in the lateral navigation mode (LNAV) the autopilot uses:

1. **the roll or heading command computed by the FMS.**
2. the FMS active (TO) waypoint coordinates.
3. the path angle command computed by the FMS.
4. the FMS computation of the aircraft position and the FMS active (TO) waypoint bearing.

Question: When engaged in the FMS lateral navigation mode (LNAV) the autopilot uses the command provided by the:

1. VOR receiver.
2. VOR or Localizer receiver.
3. **FMS.**
4. track selector.

Question: During a final approach, the flight director is engaged in the LOC mode (holding of localizer axis). If the vertical command bar is deviating to the left, it means that the aircraft:

A. must be rolled to the left.
B. must be rolled to the right.
C. is right of the LOC axis.
D. is left of the LOC axis.

Question: During a final approach, the flight director is engaged in the LOC mode (holding of localizer axis). The position of the vertical command bar indicates: 1- the position of the aircraft relative to the localizer axis. 2- the roll altitude of the aircraft**. 3- the correction on the bank to be applied to join adn follow the localizer axis.** The combination regrouping all the correct statements is:

Question: Flying manually during a final approach, the flight director system is engaged in the LOC mode (holding of localizer axis). *If the aircraft is left of the Localizer axis*, the vertical command bar:

A. may be centred if the pilot is correcting to come back on the Localizer axis.
B. deviates to the right, whatever the attitude of the aircraft is.
C. is automatically centred since the LOC mode is engaged.
D. deviates to the left, whatever the attitude of the aircraft is.

Question: The position of the command bars of a flight director enables the pilot to know:

A. only the direction of the corrections to apply on the controls.
B. the direction and the amplitude of the corrections to apply on the controls.
C. the attitude of the aircraft.
D. the position of the aircraft.

Question: The flight director is engaged in the heading select mode (HDG SEL) , heading 180° selected. When heading is 160°, the vertical bar of the FD:

A. is centered if the aircraft has a 20° left drift.
B. cannot be centered.
C. is centered if the aircraft has a 20° right drift.
D. is centered if the bank angle of the aircraft is equal to the bank angle computed by the flight director calculator.

Question: An aircraft flies steadily on a heading 270°. The flight director is engaged in the heading select mode (HDG SEL), heading 270° selected. If a new heading 360° is selected, the vertical trend bar:

A. disappears, the new heading selection has deactivated the HDG mode.
B. deviates to the right and will be centred as soon as you roll the aircraft to the bank angle calculated by the flight director.
C. deviates to its right stop as long as the aeroplane is more than 10° off the new selected heading.
D. deviates to the right and remains in that position until the aircraft has reached heading 360°.

Question: When using the autopilot, the function(s) of the pitch channel automatic trim is (are) to: **1 - off-load any steady state elevator deflections** 2 - ease as much as possible the steady state loadof the rudder **3 - restore to the pilot a correctly trimmed aeroplane during the autopilot disengagement.** The combination that regroups all of the correct statements is:

Question: Concerning a fail-operational flight control system, in the event of a failure: **1 - the system will operate as a fail-passive system.** 2 - the landing is not completed automatically. **3 - the landing is completed automatically.** The combination that regroups all of the correct statements is:

Question: A flight control system is fail-operational if, in the event of a failure:

A. the landing is not completed automatically.
B. there is no significant out-of-trim condition or deviation of flight path or attitude but the landing is not completed automatically.
C. the approach only can be completed automatically.
D. the approach, flare and landing can be completed automatically.

Question: During an automatic landing, between 50 FT AGL and touch down, the autopilot maintains:

A. a vertical speed according to the radio altimeter height
B. a constant vertical speed of 2 feet/second
C. a vertical speed according to the GPS height
D. a constant flight path angle with reference to the ground

During an auto land the descent profile is no longer following the ILS glide slope and is instead under the control of the radio altimeter. In order to achieve a good landing the rate of descent is reduced to 2 ft/sec.

Question: If, in the event of a failure, there is no significant out-of-trim condition or deviation of flight path or attitude but the landing is not completed automatically, such an automatic landing system is considered as:

A. fail-redundant.
B. fail-operational.
C. fail-safe.
D. fail-passive.

If the autoland cannot be continued after a failure it is a “fail passive” system; if theautoland can be continued it is “fail active” or “fail operational”.

Question: If, in the event of a failure, the approach, flare and landing can be completed by the remaining part of the automatic system, such an automatic landing system is considered as:

A. fail-hard.
B. faill-passive.
C. fail-soft.
D. fail-operational.

Question: An automatic landing system necessitating that the landing be continued manually in the case of a system failure during an automatic approach is called "FAIL...."

A. "PASSIVE"
B. "OPERATIONAL"
C. "REDUNDANT"
D. "SAFE"

Question: A flight control system which can, in the event of a failure, complete automatically the approach, flare and landing is called fail ...

A. operational.
B. soft.
C. hard.
D. passive.

Question: Concerning a fail-passive flight control system, in the event of a failure: 1 - there may be a significant deviation of flight path or attitude **2 - there is no significant deviation of flight path or attitude**

3 - there is no significant out-of-trim condition 4 - there may be a significant out-of-trim condition The combination that regroups all of the correct statements is:

Question: A flight control system is fail-passive if, in the event of a failure:

A. the system operates as a fail-operational system.
B. there is no significant out-of-trim condition or deviation of flight path or attitude but the landing is not completed automatically.
C. the system operates as a fail-operational hybrid landing system.
D. there is no significant out-of-trim condition or deviation of flight path or attitude and the landing is completed automatically.

Question: The IAS or Mach hold mode is provided by **1- the autopilot pitch channel in the climb mode at a constant IAS or Mach number** 2- the autothrottles in the climb mode at a constant IAS or Mach number 3- the autopilot pitch channel in the altitude or glide path holding mode **4- the autothrottles in the altitude or glide path holding mode** The combination regrouping all the correct statements is:

Question: The "airspeed hold " mode can be engaged and maintained during:

A. climbs and descents only.
B. climbs, descents, turns and power changes.
C. turns only.
D. climbs, descents, and power changes only.

Question: The initiation of an automatic go-around can be:

A. at Vy +/- 5kt only.
B. **in a range of approach airspeeds.** The go-around mode is armed at 1500ft in the approach phase.
C. at 70kt +/- 5kt only.
D. with no limit of approach airspeeds.

Question: "Heading hold" is normally:

A. not regarded as a basic function.
B. regarded as a basic function of a stability augmentation system.
C. a function of a stability augmentation system.
D. regarded as a basic function of automatic stabilisation equipment.

Question: When engaging the autopilot, the function providing a smooth 'take-over' is the:

A. automatic CWS (Control Wheel Steering) function .
B. automatic synchronisation function.
C. automatic pitch trim function .
D. Mach trim function.

Question: When disengaging the autopilot, the function providing a smooth 'hand-over' is the:

A. Mach trim function.
B. automatic synchronisation function.
C. automatic CWS (Control Wheel Steering) function.
D. automatic pitch trim function.

Question: The automatic pitch trim: 1 - ensures the aeroplane is properly trimmed when the autopilot is engaged **2 - permits the elevator to always be in neutral position with respect to horizontal stabiliser 3- ensures the aeroplane is properly trimmed when the autopilot is disengaged.** The combination regrouping all the correct statements is:

Question: Which one of the following statements is true with regard to the operation of a Mach trim system:

1. It operates over the full aircraft speed range.
2. It only operates when the autopilot is engaged.
3. It operates to counteract the larger than normal forward movements of the wing centre of pressure at high subsonic airspeeds.
4. **It only operates above a pre-determined Mach number.**

Question: The purpose of Auto Trim function in autopilot is to:

1. **control elevator trim tab in order to relieve elevator load**
2. help Auto Pilot compensate for crosswind influence
3. trim throttles to obtain smooth engine power variation
4. tell the pilot when elevator trimming is required

Question: Mach Trim is a device to compensate for:

1. **backing of the aerodynamic centre at high Mach numbers by moving the elevator to nose-up**
2. the effects of fuel transfer between the main tanks and the tank located in the horizontal tail
3. weight reduction resulting from fuel consumption during the cruise
4. the effects of temperature variation during a climb or descent at constant Mach

Question: The purpose of an aeroplane automatic trim system is to position the stabilizer automatically to off-load the:

1. elevator(s) and rudder(s)
2. elevator(s), rudder(s) and ailerons.
3. rudder(s)
4. **elevator(s)**

Question: An aircraft is in a steady left turn, with too much left rudder (skidding turn). The yaw damper system:

1. acts on the left rudder pedal to provide a balanced turn.
2. acts only in case of slipping turns (turn with too much bank).
3. acts on the right rudder pedal to provide a balanced turn.
4. **is not designed to provide a balanced turn.**

Question: An aircraft is in a steady right turn, with not enough right rudder (slipping turn). The yaw damper system:

1. acts on the right rudder pedal to provide a balanced turn.
2. acts only in case of skidding turns (turn with not enough bank).
3. acts on the left rudder pedal to provide a balanced turn.
4. **is not designed to provide a balanced turn.**

Question: The yaw damper system acts on:

1. the rudder and simultaneously moves the rudder pedals.
2. the ailerons and simultaneously moves the roll trim.
3. the ailerons without moving the roll trim.
4. **the rudder without moving the rudder pedals.**

Question: The yaw damper system acts on:

1. the rudder and the roll trim if necesarry.
2. the rudder and the speed brakes if necessary.
3. the rudder and the ailerons if necessary.
4. **the rudder only.**

Question: When the yaw damper system sends motion orders to the rudder:

1. **no feedback is provided on the rudder pedals.**
2. a feedback is provided on the rudder pedals only.
3. a feedback is provided on the roll trim only.
4. a feedback is provided on the rudder pedals and the roll trim.

Question: The yaw damper, which suppresses Dutch roll:

1. controls the ailerons, with Mach Number as the input signal.
2. **controls the rudder, with the angular rate about the vertical axis as the input signal.**
3. controls the rudder, with Mach Number as the input signal.
4. controls the ailerons, with the angular rate about the vertical axis as the input signal.

Question: In a yaw damper system, sensing of a disturbance in yaw is usually by:

1. measuring the ailerons angular movement.
2. **a rate gyro or an accelerometer.**
3. measuring the roll rate.
4. measuring the rudder angular movement.

Question: The yaw damper indicator supplies the pilot with information regarding the:

1. rudder position
2. **yaw damper action on the rudder**
3. rudder displacement by the rudder pedals
4. yaw damper action only on the ground

Question: The Yaw Damper system: 1 - counters any wrong pilot action on the rudder pedals; **2 - counters dutch roll;** 3 - is active only when autopilot is engaged. The combination regrouping all the correct statements are:

Question: The yaw damper system controls:

1. the rudder, with Mach Number as the input signal.
2. the ailerons, with Mach Number as the input signal.
3. the ailerons, with the angular rate about the yaw axis as the input signal.
4. **the rudder, with the angular rate about the yaw axis as the input signal.**

Question: The commands sent out by the yaw damper computer:

1. **are added to or substracted from the rudder deflection orders sent out by the pilot or the autopilot.**
2. inhibit the rudder deflection orders sent out by the pilot or the autopilot.
3. are inhibited when the pilot acts on the rudder pedals.
4. are inhibited when the autopilot is engaged.

Question: The automatic trim is a component of the autopilot pitch channel. Its function is to:

1. **transfer a stabilized aeroplane to the pilot during autopilot disengagement.**
2. set the attitude to an instantaneous value before engaging the autopilot.
3. automatically disengage the autopilot in the case of an excessive pitch up.
4. reset the attitude, after engaging (the autopilot).

Question: The Mach trim system allows to:

1. interlock the operation of the stick shaker at the oncoming of the high speed stall.
2. **increase the longitudinal static stability of the aircraft by changing the horizontal stabilizer according to the Mach number.**
3. search for the ideal C.G. location by transferring the fuel into the horizontal stabilizer.
4. trim the pitch-up tendency at a high Mach number.

Question: Given: MH = magnetic heading of the aircraft Omega = yawing rate of the aircraft The yaw damper computer sends a motion order to the rudder if:

1. the derivative of MH according to time is equal to zero.
2. the derivative of MH according to time is not equal to zero.
3. **the derivative of Omega according to time is not equal to zero.**
4. the derivative of Omega according to time is equal to zero.

Question: The flight envelope protection system prevents the aircraft from exceeding the limits of the following parameters (among others): 1 - cabin altitude **2 - bank angle 3 - angle of attack 4 - speed 5 - pitch attitude** The combination that regroups all of the correct statements is:

Question: The flight envelope protection function(s) consist(s) in: 1 - automatically performing an evasion manoeuvre if necessary **2 - preventing the aircraft from exceeding the limits for specific flight parameters** 3 - alerting the flight crew in case of dangerous proximity with a threatening traffic 4 - preventing any incursion beyond an ATC clearance The combination that regroups all of the correct statements is:

Question: The main inputs to the flight envelope protection system are: 1 - GPWS signals 2 - ACAS signals **3 - angle of attack 4 - bank angle** The combination that regroups all of the correct statements is:

Question: The flight envelope protection system prevents the aircraft from exceeding the limits of the following parameters (among others): 1 - N1 **2 - angle of attack 3 - speed 4 - pitch attitude** 5 - flight level The combination that regroups all of the correct statements is:

Question: The flight envelope protection function(s) consist(s) in: 1 - alerting the flight crew in case of dangerous proximity with the ground 2 - avoiding midair collision **3 - preventing the aircraft from exceeding some aerodynamic limits** The combination that regroups all of the correct statements is:

Question: The EPR (Engine Pressure Ratio) is:

1. the ratio of the turbine outlet total pressure to the ambient total pressure.
2. **the ratio of the turbine outlet total pressure to the compressor inlet total pressure.**
3. the ratio of the compressor outlet total pressure to the compressor inlet total pressure.
4. the difference between the compressor inlet total pressure and the turbine outlet total pressure.

Question: The two main sources of information used to calculate turbojet thrust are the:

1. high pressure turbine rotation speed or the EPR (Engine Pressure Ratio).
2. fan rotation speed (or N1) or the total pressure at the high pressure compressor outlet.
3. fan rotation speed (or N1) or the total pressure at the low pressure turbine outlet.
4. **fan rotation speed (or N1) or the EPR (Engine Pressure Ratio).**

Question: In order to know in which mode the auto-throttles are engaged, the crew will check the: 1 - auto-throttle ARM switches 2 - auto-throttlle disengage switches 3 - mode control panel **4 - mode annunciator panel** The combination regrouping all the correct statements is:

Question: The autothrottle system:

1. is automatically disconnected when the aircraft is on the ground.
2. can be engaged in the GS mode - holding of constant Ground Speed - during a final approach.
3. can be engaged in the TAS mode - holding of constant TAS - during a final approach.
4. **can be used for take-off.**

Question: The purpose of Auto Throttle is:

1. **to maintain constant engine power or aeroplane speed.**
2. to synchronize engines to avoid "yawing".
3. automatically shut down an engine if it is at too high temperature.
4. to deactivate manual throttles and transfer engine control to Auto Pilot.

Question: The auto-throttles enables to hold: 1 - TAS; **2 - a Mach number; 3 - IAS; 4 - N1**. The combination regrouping all the correct statements is:

Question: During the ground run take-off phase, the auto-throttles allow to:

1. hold IAS.
2. maintain V2 under 1,500 ft.
3. hold and maintain the Mach number.
4. **hold N1.**

Question: When cruising, the autothrottle system can be engaged in the following mode(s): holding of constant: 1 - TAS **2 - IAS 3 - Mach number** The combination that regroups all of the correct statements is:

Question: The auto-throttle: **1- can capture and maintain the N1 RPM** 2- can capture and maintain the N2 RPM **3- can capture and maintain an IAS** 4- is always engaged automatically at the same time as the autopilot The combination that regroups all of the correct statements is:

Question: The auto-throttle system of a transport aeroplane has the following mode(s): **1- capture and holding of IAS 2- capture and holding of Mach number** 3- capture and holding of flight angle of attack **4- capture and holding of N1 or EPR** 5- capture and holding of flight paths The combination that regroups all of the correct statements is:

Question: The FADEC (Full Authority Digital Engine Control) can provides**: 1 - thrust reverser control 2 - engine operation within safe limits 3 - automatic engine starting sequence 4 - automatic thrust rating control** The combination that regroups all of the correct statements is:

Question: The FADEC (Full Authority Digital Engine Control): **1 - provides fully automatic engine starting** 2 - modifies aircraft airspeed in order to allow for the lowest fuel consumption 3 - counters any yaw movement in case of engine failure **4 - provides thrust reverser control** The combination that regroups all of the correct statements is:

Question: A Full Authority Digital Engine Control (FADEC) has the following functions : **1- flow regulation (fuel, decelerations and accelerations monitoring) 2- automatic starting sequence 3- transmissions of engine data to the pilot's instruments 4- thrust management and protection of operation limits 5- monitoring of the thrust reversers** The combination regrouping all the correct statements is:

Question: The FADEC (Full Authority Digital Engine Control) provides: 1 - engine automatic shut-down if maximum N1 is exceeded 2 - engine automatic shut-down if maximum EGT is exceeded **3 - automatic thrust rating control 4 - fully automatic engine starting** The combination that regroups all of the correct statements is:

Question: During a manual ILS final approach, the auto-throttle: **Question:** During a climb with the autopilot engaged in the V/S mode (holding of vertical speed), the auto-throttle:

1. can be operated in the N1 (EPR) mode (holding of N1 or EPR).
2. **can be operated in the SPEED mode (holding of IAS).**
3. is not available.
4. can not be engaged because autopilot is not engaged.
5. can be operated in the SPEED (holding of IAS) or N1 (holding of N1) modes.

Question: Considering a modern thrust computer, during a steady climb:

1. N1 and N2 remain constant.
2. N2 is automatically adjusted as aircraft climbs and N1 remains constant.
3. **N1 is automatically adjusted as aircraft climbs.**
4. N1 is automatically adjusted as aircraft climbs and N2 remains constant.

Question: The ADS is a FANS application performed:

1. semi automatically, the pilot has to define the set of data to downlink but cannot define the type of report contract.
2. **automatically, without any crew action to define the set of data to downlink or the type of report contract.**
3. manually, the pilot has to define the set of data to downlink and the type of report contract.
4. semi automatically, the pilot cannot define the set of data to downlink but can define the type of report contract.

Question: When sent, a MAYDAY datalink message to the ATC has the following effect on ADS:

1. no change to the current contract in process.
2. **the ADS contract is switched to high periodic reporting rate.**
3. the ADS current contract reporting rate is unchanged but includes more data.
4. the ADS current contract is stopped.

Question: The notification phase (LOG ON) is a FANS application which consists in transmitting aircraft information and:

1. aircraft position to request the datalink clearance to enter an airspace.
2. **associated datalink capability, prior to operating any datalink communications with ATC.**
3. aircraft position to the airport ground controller to request the datalink taxi clearance.
4. park stand to the airport pre-flight controller to request the datalink pre-departure clearance (PDC).

Question: Comparing the media used to transmit datalink communications, the appropriate classification from the slowest to the fastest data transmission rate is:

1. SATCOM, VHF datalink, HF datalink.
2. SATCOM, HF datalink, VHF datalink.
3. HF datalink, SATCOM, VHF datalink.
4. **HF datalink, VHF datalink, SATCOM.**

Question: The Notification phase (LOG ON) is a FANS application which consists in:

1. requesting to transfer datalink communication to the next ATC center on the route.
2. sending automatically aircraft surveillance data to the ATS facility.
3. transmitting datalink messages between the pilot and ATC controller.

4. **establishing air/ground connection to verify if the datalink communication can be performed.**

Question: The uplink datalink messages " CLIMB TO REACH [altitude] BY [time]" means:

1. a climb is to commence at or after the specified time.
2. a climb is to commence at or before the specified time.
3. **a climb is to commence at a rate such that the specified level is reached at or before the specified time.**
4. a climb is to commence at a rate such that the specified level is reached at or after the specified time.

Question: The uplink datalink message " AT [position] CLIMB TO [altitude] AND MAINTAIN " is part of the: **Question:** A MAYDAY datalink message can be sent to the ATC via the:

1. AFN application.
2. TAWS application.
3. **CPDLC application.**
4. ADS application.

Question: The ACARS allows air/ground datalink communications for:

1. Airline Operational Communication only (AOC).
2. Airline Operational and Public Communications (AOC & PC).
3. **Airline Operational and Air Traffic Communications (AOC & ATC).**
4. Air Traffic Control Communication only (ATC).

Question: The FANS concept includes:

1. an enhanced detection of the intruding traffics.
2. an improvement in the accuracy of the navigation systems aiming to carry out RNAV approaches.
3. an enhanced detection of the nearby terrain.
4. **a datalink communication between the aircraft and the ATC centers to replace the voice communication.**

Question: A D-ATIS is:

1. a Divertion ATIS for the alternate airport.
2. an ATIS message broacasted on HF when out of the VHF radio range from the airport.
3. **an ATIS message received by datalink.**
4. a short ATIS that only includes parameters that have changed from previous ATIS record.

Question: The ground routing of the ATC datalink communications is performed:

1. by each ATC local network of the FIR airspace where the aircraft flies into.
2. by the GSM (mobile phone) providers interconnected to provide continuity of transmissions.
3. by the airline ground network interconnected to the ATC network.
4. **by service providers (SITA, ARINC…) that can be interconnected to provide continuity of the transmissions.**

Question: The following ATC clearances can be received via the datalink application:

1. Departure, En route, Landing.
2. Take off, En route, Landing.

3. **Departure, Oceanic.**
4. Departure, Take off, En route.

Question: The CPDLC is a FANS application which consists in:

1. connecting the aircraft to the appropriate ATC center.
2. sending automatically aircraft surveillance data to the air traffic controller.
3. establishing air/ground connexion to verify if the datalink communication can be performed.
4. **transmitting datalink formatted messages between the pilot and ATC controller.**

Question: The CPDLC messages may concerne**: 1 - Route modifications 2 - Speed changes 3 - Voice contact request 4 - Emergency messages** The combination regrouping all the correct statements is:

Question: The CPDLC function consists in exchanging messages relative to**: 1 - Route modifications 2 - Crossing constraints 3 - Transfer of ATC center 4 - Speed changes** The combination which regroups all of the correct statements is:

Question: The ADS is a FANS application which consists in:

1. connecting the aircraft to the appropriate ATC center.
2. **sending automatically aircraft surveillance data to the air traffic controller.**
3. broadcasting aircraft position and intents to the other aircraft in the vicinity.
4. establishing automatic air/ground connexion to verify if the datalink communication can be performed.

Question: The different types of ADS contracts can be: **1 - periodic: at periodic time intervals 2 - on demand: when asked for by the ATC 3 - on event: whenever a specified event occurs** The combination which regroups all of the correct statements is:

Question: The systems that can be connected to the Communication Management Unit (CMU), are: 1 - EGPWS **2 - HF Communication Unit 3 - Multipurpose Control and Display Unit (MCDU) 4 - VHF Communication Unit 5 - Satcom** The combination which regroups all of the correct statements is:

Question: The systems that can be connected to the Communication Management Unit (CMU), are: 1 - Flight Director **2 - FMS 3 - Multipurpose Control and Display Unit (MCDU) 4 - communication unit (VHF, HF, Satcom)** The combination which regroups all of the correct statements is:

Question: The basic on-board datalink communication system is typically composed by the following sub systems: **1 - Communication Management Unit (CMU) 2 - Multi-purpose Control and Display Unit (MCDU) 3 - Communication unit (VHF, HF, Satcom)** The combination which regroups all of the correct statements is:

Question: The characteristics of the SATCOM transmissions, used for datalink communications are:

A. **no line of sight limitation, no variable quality of signals disturbed by ionospheric conditions.**
B. line of sight limitation, variable quality of signals depending on ionospheric conditions.
C. no line of sight limitation, variable quality of signals depending on ionospheric conditions.
D. line of sight limitation, no variable quality of signals disturbed by ionospheric conditions.

Question: The datalink communications between the aircraft and the ground can be performed by the following system:

A. TCAS.
B. **ACARS.**
C. EGPWS.

D. CVR.

Question: In a datalink system, the uplink communications consist in transmitting data:

A. from the flight deck to the cabin.
B. from the aircraft to the ground.
C. from the aircraft to the airline maintenance.
D. from the the ground to the aircraft.

Question: In a datalink system, the downlink communications consist in transmitting data:

A. from the aircraft to the ground.
B. from the airline maintenance to the aircraft.
C. from the ground to the aircraft.
D. from the flight deck to the cabin.

Question: The on-board communication devices to transmit and receive datalink communication can be: **1- VHF COM 2- HF COM 3- SATCOM** The combination which regroups all of the correct statements is:

Question: The FMC determines and update present aircraft position from the following systems: 1- SATCOM **2- GPS 3- DME 4- IRS** The combination that regroups all of the correct statements is:

Question: How is the radio position determined by the FMC in the B737-400 Electronic Flight Instrument System?

A. DME ranges and/ or VOR/ADF bearings
B. VOR/DME range and bearing
C. VOR/VOR or ADF bearings
D. DME/DME or VOR/DME

DME/DME fixing is always the preferred option. Some systems fall back to co-located VOR/DME fixing but not this one. No systems use DME/ADF fixing.

Question: The datalink communication message "CHECK STUCK MICROPHONE [frequency]" refers to a request from:

A. the ATC to the pilot to check microphone buttons due to a continuous transmission detected on the frequency.
B. the pilot to the ATC to solve a continuous transmission issue with the voice frequency.
C. the ATC to the pilot to transmit blind.
D. the ATC to the pilot to revert to the voice communication by pushing and holding a few seconds the mike button.

Question: The uplink datalink message " EXPECT CRUISE CLIMB AT [time] " means:

A. a climb to the given cruise altitude is to be initiated at the specified time.
B. a climb to the given cruise altitude is to be terminated at the specified time.
C. a climb instruction should be received to initiate the cruise climb at the specified time.
D. a climb instruction should be received to end the cruise climb at the specified time.

Question: The uplink datalink message " AT [time] CLIMB TO AND MAINTAIN [altitude]" means:

A. at the specified time the specified altitude is to be reached.
B. after the climb the specified altitude is to be maintained from the specified time.
C. after the climb the specified altitude is to be maintained until the specified time.
D. at the specified time a climb to the specified altitude is to be started and the specified altitude is to be maintained.

Question: The data base of a FMC (flight management computer) is divided into two major sections:

- **A. aeroplane performance and navigation.**
- B. navigation and meteorology.
- C. inertial and navigation.
- D. aeroplane performance and fuel saving.

Question: The FMC determines and update present aircraft position from the following systems: **1 - GPS 2 - IRS 3 - Navigation radios** 4 - ACARS The combination that regroups all of the correct statements is:

Question: What are, in order of highest priority followed by lowest, the two levels of message produced by the CDU of the B737-400 Electronic Flight Instrument System?

- A. Priority and Alerting
- B. **Alerting and Advisory** Alerting (you must do something) and advisory (may require future action).
- C. Urgent and Advisory
- D. Urgent and Routine

Question: Which FMC/CDU page normally appears on initial power application to the B737-400 Electronic Flight Instrument System?

- A. POS INIT
- B. INITIAL
- C. PERF INIT
- **D. IDENT** The first screen seen is the IDENT screen – just to confirm that you are in the correct aircraft.

Question: Which of the following lists the first three pages of the FMC/CDU normally used on initial start-up of the B737-400 Electronic Flight Instrument System?

- **A. IDENT - POS INIT - RTE**
- B. POS INIT - RTE - IDENT
- C. POS INIT - RTE - DEPARTURE
- D. IDENT - RTE - DEPARTURE

IDENT does not require data entry, but then neither does DEPARTURE.This question has been acknowledged as misleading, what the examiners apparently meant was 'What are the first three FMS pages viewed?',

Question: The purpose of magnetic chip detectors is to:

- **A. warn of impending failure.**
- B. increase lubricating oil adhesion to main surfaces.
- C. perform the function of a micron filter.
- D. remove large items of debris from the system.

Question: For compatibility between the different components of a flight warning system, the priority from the highest to the lowest is:

- **A. Stall, Windshear, GPWS, TCAS.**
- B. GPWS, Stall, TCAS, Windshear.
- C. Stall, TCAS, GPWS, Windshear.
- D. TCAS, Stall, Windshear, GPWS.

Question: If warning, caution, or advisory lights are installed in the cockpit, they must, unless otherwise approved by the Authority, be red for:

- A. other distress messages.
- B. advisory lights.
- **C. warning lights.**

Warning = you must take action now (red). Caution = you should take action soon (yellow/amber). Advisory = for information only, action not essential (green).

D. caution lights.

Question: If immediate recognition and corrective or compensatory action by the crew is required, the flight warning system (FWS) generates:

A. a warning message. In red; do something NOW !
B. an advisory message.
C. a distress message.
D. a caution message.

Question: In case of impending stall, the flight warning system (FWS) generates:

A. an urgency message.
B. an advisory message.
C. a warning message.
D. a caution message.

Advisory message: just be informed and possible action or not

Caution message: immediate recognition and future action

Warning message: immediate recognition and immediate action

Question: The flight warning system (FWS) generates a caution message if:

A. immediate crew awareness is required and subsequent crew action will be required.
B. crew awareness is required and corrective or compensatory action by the crew is immediately required.
C. crew awareness is required and subsequent crew action may be required.
D. immediate recognition and corrective or compensatory action by the crew is required.

Question: The flight warning system (FWS) generates a warning message if:

A. crew awareness is required and subsequent crew action may be required.
B. immediate recognition and corrective or compensatory action by the crew is required.
C. immediate crew awareness is required and corrective or compensatory action by the crew may be required.
D. immediate crew awareness is required and subsequent crew action will be required.

Question: The flight warning system (FWS) generates an advisory message if:

A. crew awareness is required and subsequent crew action may be required.
B. crew awareness is required and corrective or compensatory action by the crew is required.
C. immediate recognition and corrective or compensatory action by the crew is required.
D. immediate crew awareness is required and subsequent crew action will be required.

Question: The flight warning system (FWS): **1 - increases the situation awareness of the crew**. 2 - transmits automatically to ATC distress messages. **3 - gives suitable indications to the crew of the action necessary to avoid impending danger. 4 - prioritises warnings.** 5 - can not generate alerts in case of aerodynamic limits exceeding. The combination that regroups all of the correct statements is:

Question: The flight warning system (FWS): **1 - draws the attention of the crew to the existence of an abnormal condition 2 - gives indications to the crew to identify an abnormal condition** 3 - transmits automatically to ATC urgency messages 4 - can not generate alerts in case of engine malfunctions **5 - prioritises warnings** The combination that regroups all of the correct statements is:

Question: The purpose of the altitude alert system is to generate a visual and aural warning to the pilot when the:

A. aeroplane altitude differs from a selected altitude.
B. proximity to the ground becomes dangerous.
C. altimeter setting differs from the standard setting above the transition altitude.

D. aeroplane altitude is equal to the decision altitude.

Question: If warning, caution, or advisory lights are installed in the cockpit, they must, unless otherwise approved by the Authority, be green, for:

A. advisory lights.
B. caution lights.
C. warning lights.
D. safe operation lights. Red for warning, yellow for caution and green for safe operation.

Question: If warning, caution, or advisory lights are installed in the cockpit, they must, unless otherwise approved by the Authority, be amber for:

A. caution lights.
B. advisory lights.
C. other urgency messages.
D. warning lights.

Question: If immediate crew awareness is required and subsequent crew action will be required, the flight warning system (FWS) generates:

A. a warning message.
B. an urgency message.
C. an advisory message.
D. a caution message. If it is something the crew should be aware of it is a caution and is in amber/yellow.

Question: If crew awareness is required and subsequent crew action may be required, the flight warning system (FWS) generates:

A. a call message.
B. a caution message.
C. a warning message.
D. an advisory message.

Question is based on CS 25:

Caution - subsequent action **will** be required.

Advisory - subsequent action **may** be required.

Question: The Decision Height (DH) warning light comes on when an aircraft:

A. **descends below a pre-set radio altitude.** The warning light is triggered by the radio altimeter.
B. passes over the outer marker.
C. passes over the ILS inner marker.
D. descends below a pre-set barometric altitude.

Question: Lights indicating the possible need for future corrective action must be:

A. Magenta.
B. red.
C. red and white striped.
D. amber.

"Possible need for future action" means caution rather than "immediate action necessary" which is a warning.

Question: Alarms are standardised and follow a code of colours. Those requiring action but not immediately, are signalled by the colour:

A. amber
B. flashing red
C. red
D. green

Question: Lights indicating a hazard which may require immediate corrective action must be:

A. amber.
B. yellow.
C. magenta.
D. red.

In this question the wording does suggest that some form of action is required, although not immediately, but the word hazard indicates immediate corrective action is required, hence the answer being 'red'.

Question: Concerning the flight warning system (FWS), warning messages:

A. indicate that subsequent crew action may be required.
B. are inhibited by caution messages.
C. are highest priority alert messages.
D. are next highest priority alert messages after warning messages.

Question: Concerning the flight warning system (FWS), caution messages:

A. indicate that immediate recognition and corrective or compensatory action by the crew is required.
B. are the highest priority alert messages.
C. are the next highest priority alert messages after warning messages.
D. are inhibited by advisory messages.

Question: Concerning the flight warning system (FWS), if aural signals are provided, the signal for:

A. a warning should always take priority over that for a caution.
B. an advisory should always take priority over that for a warning.
C. an advisory should always take priority over that for a caution.
D. a caution should always take priority over that for a warning.

Question: Concerning the flight warning system (FWS), advisory messages may be:

A. any colour except amber.
B. any colour except green.
C. any colour except red, and preferably not amber.
D. red.

Question: The stall warning computer of a large aeroplane uses the following data: 1 - pitch attitude **2 - angle of attack 3 - configuration (slats / flaps)** The combination that regroups all of the correct statements is:

Question: The stall warning system of a large aeroplane includes: **1 - an angle of attack sensor 2 - a computer** 3 - an independent pitot probe **4 - a transmitter of the flap/slat position indicating system** The combination that regroups all of the correct statements

Question: On a large aeroplane and according to the CS25: the regulatory margin between the stall and stall warning is:

A. 5 kt or 5% of the CAS whichever is the lower.
B. VS0 + 5kt.
C. VS0 + 5%
D. 5 kt or 5% of the CAS whichever is the greater.

Question: On a large aeroplane and according to the CS25: when the speed is reduced, the stall warning must begin:

A. **at a speed exceeding the stall speed by not less than 5 kt or 5% CAS.**
B. exactly at the stall speed.
C. at the stall speed +/- 5%.
D. at a speed exceeding the stall speed by not less than 10 kt or 10% CAS.

Question: On a large aeroplane, the computer of a stall warning system receives information about the: **1 - angle of attack** 2 - engine R.P.M. **3 - configuration** 4 - pitch and bank attitude 5 - sideslip The combination that regroups all of the correct statements is

Question: The main input data to the Stall Warning Annunciator System (SWS) are: 1- Mach Meter indication **2- Angle of Attack** 3- Indicate Airspeed (IAS) **4- Aircraft configuration (Flaps/Slats)** The combination regrouping all the correct statements is: Stall warning systems must have angle of attack, may have flap settings and may also have IAS but the two important ones and AOA and flap.

Question: The stall warning system receives information about the : **1- airplane angle of attack** 2- airplane speed 3- airplane bank angle **4- airplane configuration** 5- load factor on the airplane The combination regrouping all the correct statements is:

Question: On a large aeroplane, the input data of the stall warning system are: **1 - angle of attack** 2 - weight 3 - bank angle **4 - configuration (slats / flaps)** The combination that regroups all of the correct statements is:

Question: The stall warning computer uses the following data: 1- mass of the aeroplane **2- angle of attack 3- wing flap deflection** 4- position of the landing gear 5- TAT 6- pressure altitude The combination that regroups all of the correct statements is:

Question: The stall warning is inhibited: 1 - when the flaps are retracted **2 - when the aeroplane is on the ground** 3 - when encountering a windshear 4 - upon receiving a GPWS alert The combination regouping all the correct statements is:

Question: The angle of attack transmitter placed laterally on the forward part of the fuselage supplies an electrical signal which can indicate the angular position of: 1 - a specific slaved pitot probe ; **2 - a vane detector ; 3 - a conical slotted probe** . The combination regrouping all the correct statements is A "a specific slaved pitot probe" is certainly not an ADD probe and "a conical slotted probe" is a pretty poor description but it is the best on offer.

Question: An angle of attack sensor may consist of: 1 - an inertial system computing the difference between flight path and flight **attitude 2 - a conical slotted probe which positions itself to determine the angle of attack 3 - a vane detector which positions the rotor of a synchro** The combination regrouping all the correct statements is:

Question: On a large aeroplane and according to the CS25: the stall warning system must provide an alarm with sufficient margin to prevent inadvertent stalling:

A. **with the flaps and landing gear in any normal position.**
B. with the flaps not retracted only, whatever the position of the landing gear.
C. with the flaps down and gear up only.
D. with the flaps fully extended and gear down only.

Question: A VMO-MMO warning device consists of an alarm connected to:

A. a barometric aneroid capsule and an airspeed sensor subjected to a static pressure.
B. **a barometric aneroid capsule subjected to a static pressure and an airspeed sensor subjected to a dynamic pressure.** This is a combined speed indicator indicating maximum airspeed and Mach number at which the aircraft can operate. The altitude capsule is sealed and subjected to static pressure. The airspeed capsule is fed with pitot pressure but surrounded by static pressure so expands/contracts with dynamic pressure.

C. a barometric aneroid capsule and an airspeed sensor subjected to dynamic pressure.
D. a barometric aneroid capsule subjected to a dynamic pressure and an airspeed sensor subjected to a static pressure.

Question: When the flight warning system (FWS) identifies an overspeed condition (airspeed exceeding Vmo/Mmo), it generates:

A. a call message.
B. a caution message.
C. a warning message.
D. an advisory message.

Question: Which of these statements about the activation of the take-off warning when a take-off is initiated are correct or incorrect? **I. An aural warning is given when the stabiliser is not in a safe position for take-off.** II. An aural warning is given when the brake pressure is too low.

Question: Which of these statements about the activation of the take-off warning when a take-off is initiated are correct or incorrect? I. An aural warning is given when the elevator is not in a safe position for take-off**. II. An aural warning is given when the parking brake is still ON.**

Question: Which of these statements about the activation of the take-off warning when a take-off is initiated are correct or incorrect? I. An aural warning is given when the elevator is not in a safe position for take-off. II. An aural warning is given when the brake pressure is too low.

Question: An "altitude warning system" must at least warn the crew : **1- when approaching the pre-selected altitude** 2- when the airplane is approaching the ground too fast **3- in case of a given deviation above or below the pre-selected altitude (at least by an aural warning)** 4- in case of excessive vertical speed 5- when approaching the ground with the gear retracted The combination regrouping all the correct statements is :

Question: The altitude alerting system:

A. alerts the flight crew in case of an autopilot disengagement.
B. alerts the flight crew upon approaching a pre-selected altitude.
C. generates a signal once the aircraft is steady at the pre-selected altitude.
D. alerts the flight crew in case of ground proximity.

Question: The functions of the altitude alerting system is to alert the flight crew: **1 - upon approaching a pre-selected altitude** 2 - upon approaching a pre-selected altitude, during climb only 3 - of a loss of altitude during take-off or missed approach 4 - of a wrong landing configuration **5 - when deviating from the selected altitude** The combination regrouping all the correct statements is: A warning to think about leveling off.

Question: Which of these statements about the activation of the take-off warning when a take-off is initiated are correct or incorrect? **I. An aural warning is given when the stabiliser is not in a safe position for take-off. II. An aural warning is given when the parking brake is still ON.**

If the stabiliser is not in the green band when the thrust levers are advanced to the T/O position then an aural warning sounds for an unsafe take-off configuration. Other inputs can include: T/E and L/E flaps not at T/O setting, speed brake lever not in down position and body gear not centred.

Question: The low-altitude radio altimeters used in precision approaches: 1 operate in the 1540-1660 MHz range. 2 are of the pulsed type**. 3 are of the frequency modulation type**. 4 have an operating range of 0 to 5000 ft. **5 have a precision of +/- 2 feet between 0 and 500 ft and +/- 1.5% whichever is the greatest.** The combination of the correct statements is :

Question: The EGPWS:

A. is an enhanced GPWS which is able to provide resolution advisories in the lateral plane.
B. has nothing to do with the GPWS.
C. is an enhanced GPWS which has a its own world terrain database.
D. is an enhanced GPWS which warns the crew if the airplane is not in the appropriate configuration for take-off.

Question: If the computed aircraft position becomes less accurate, the Enhanced GPWS (EGPWS) function(s) affected is (are): 1- the "FIVE HUNDRED" voice call out 2- the excessive rate of descent **3- the terrain display on the navigation display** 4- the negative climb rate or altitude loss after takeoff The combination that regroups all of the correct statements is:

Question: If the computed aircraft position becomes less accurate, the Enhanced GPWS (EGPWS) function(s) affected is (are): 1- the excessive rate of descent **2- the terrain display on the navigation display** 3- the flight into terrain when not in landing conditions 4- the excessive downward deviation from an ILS The combination that regroups all of the correct statements is:

Question: The GPWS receives data from the following systems: **1- landing gear and flaps systems** 2- engine control computer (FADEC or ECU) **3- radio altimeter** 4- TCAS The combination that regroups all of the correct statements is:

Question: The aural alert(s) associated with the mode 4 of the GPWS (unsafe terrain clearance while not in the landing configuration) is (are): **1 - "TOO LOW GEAR " 2 - "TOO LOW TERRAIN " 3 - "TOO LOW FLAPS"** 4 - "PULL UP" The combination that regroups all of the correct statements is:

Question: When Enhanced GPWS (EGPWS) terrain is displayed, if the computed aircraft position becomes less accurate:

A. the terrain display will diverge from the real terrain environment around the aircraft position.
B. the EGPWS has its own position sensors thus the terrain display accuracy won't be degraded.
C. the EGPWS will perform a correction of position thus the terrain display accuracy won't be degraded.
D. the EGPWS will fail the terrain display function and the terrain will be removed from the navigation display.

Question: The GPWS generates a warning in the following cases: **1 - excessive descent rate 2 - excessive terrain closure rate 3 - altitude loss after take-off or go-around 4 - unsafe terrain clearance with abnormal gear/flaps configuration 5- excessive deviation under the glidepath** 6- abnormal airbrakes configuration The combination regrouping all the correct statements is:

Question: The aural alert(s) associated with the mode 2 (excessive terrain closure rate) of the GPWS is (are): **1 - "TERRAIN"** 2 - "SINKRATE" 3 - "TOO LOW TERRAIN" **4 - "PULL UP"** The combination that regroups all of the correct statements is:

Question: The Enhanced GPWS (EGPWS) terrain display uses with the following colours:

A. white, amber, red.
B. magenta, red, flashing red.
C. blue, red, magenta.
D. green, amber, red, magenta.

Question: The GPWS computer receives the following signals: **1 - vertical speed 2 - radio altimeter height** 3 - pressure altitude **4 - glidepath deviation 5 - gear and flaps position** 6 - flight path angle The combination that regroups all of the correct statements is:

Question: The GPWS is able to detect**: 1 - excessive descent rate 2 - excessive terrain closing rate** 3 - excessive angle of attack 4 - excessive descent pitch attitude The combination that regroups all of the correct statements is: GPWS doesn't detect pitch, roll or yaw.

Question: The operation of the GPWS (Ground Proximity Warning System) is governed by laws taking the aircraft height into account as well as : **1- the descent rate** 2- the climb rate **3- the aircraft configuration** 4- the selected engine rpm The combination of correct statements is :

Question: The Ground Proximity Warning System (GPWS) generates the following sound signal or signals when the aircraft is sinking after a take-off or a go-around:

A. **DON'T SINK repetitive only .** Mode 3 warning.
B. DON'T SINK followed by WHOOP WHOOP PULL UP if the sink rate overshoots a second level
C. DON'T SINK always followed by WHOOP WHOOP PULL UP
D. WHOOP WHOOP PULL UP repetitive only

Question: In case of excesive descent rate, the GPWS generates the following aural warnings:

A. "TERRAIN, TERRAIN" followed by "WHOOP WHOOP PULL UP" (twice)
B. "DON'T SINK, DON'T SINK"
C. "TOO LOW, TERRAIN" (twice) followed by "TOO LOW GEAR" (twice)
D. "SINK RATE, SINK RATE" followed by "WHOOP WHOOP PULL UP" (twice)

Question: The aural alert associated with the mode 5 (excessive deviation below Glideslope) of the GPWS is:

A. "GLIDESLOPE". GPWS Mode 5 warning: "GLIDESLOPE".
B. "MONITOR GLIDESLOPE".
C. "TOO LOW GLIDESLOPE".
D. "CAUTION GLIDESLOPE".

Question: The aural alert associated with the mode 1 (excessive descent rate) of the GPWS is:

A. "TERRAIN".
B. "DON'T SINK".
C. "SINKRATE".
D. "TOO LOW TERRAIN".

Question: The aural alert associated with the mode 3 (altitude loss after take-off or go-around) of the GPWS is:

A. "TERRAIN".
B. "DON'T SINK".
C. "SINKRATE".
D. "TOO LOW TERRAIN".

Question: The aural alert associated with the mode 2 (excessive terrain closure rate) of the GPWS is:

A. "DON'T SINK".

B. "TERRAIN".
C. "CLIMB".
D. "SINKRATE".

Question: The aural alert(s) associated with the mode 4 of the GPWS (unsafe terrain clearance while not in the landing configuration) is (are):

A. "TOO LOW GEAR", "TOO LOW FLAPS", "TOO LOW TERRAIN"
B. "TOO LOW FLAPS", "TOO LOW GEAR", "GLIDE SLOPE"
C. "TOO LOW", "CHECK FLAPS", "CHECK GEAR".
D. "TOO LOW, TERRAIN" only.

Question: In the case of altitude loss during the initial climb after take off, GPWS generates an aural alert:

A. "TOO LOW GEAR".
B. "TERRAIN AHEAD".
C. "TOO LOW FLAPS".
D. "DON'T SINK".

Question: The aural alert(s) associated with the mode 1 (excessive descent rate) of the GPWS is (are): 1 - "TERRAIN" 2 - "DON'T SINK**" 3 - "SINKRATE" 4 - "PULL UP"** The combination that regroups all of the correct statements is:

Question: The aural alert(s) associated with the mode 3 (altitude loss after take-off or go-around) of the GPWS is (are): **1 - "DON'T SINK"** 2 - " SINKRATE " 3 - "TERRAIN" 4 - "PULL UP" The combination that regroups all of the correct statements is:

Question: The aural alert(s) associated with the mode 5 (excessive deviation below Glideslope) of the GPWS is (are): 1 - "TERRAIN" 2 - "TOO LOW GLIDESLOPE" **3 - "GLIDESLOPE"** 4 - "PULL UP" The combination that regroups all of the correct statements is:

Question: The GPWS uses the following data**: 1- CAS 2- radio altitude 3- glide slope deviation 4- flaps position 5- gear position** The combination that regroups all of the correct statements is:

Question: If the GPWS (Ground Proximity Warning System) activates, and alerts the pilot with an aural warning "DON'T SINK" (twice times), it is because :

A. the aircraft experiences an unexpected proximity to terrain, without landing-flap selected.
B. at too low altitude, the aircraft has an excessive rate of descent.
C. the aircraft experiences an unexpected proximity to the terrain, with landing gear retracted.
D. during take-off or missed approach manoeuvre, the aircraft has started to lose altitude. GPWS mode 3 warning of height loss after take-off or go-around.

Question: A ground proximity warning system (GPWS), when mandatory installed on board an aircraft, must in all cases generate :

A. a visual alarm to which a sound alarm can be
B. at least one sound alarm to which a visual alarm can be added Must have sound, may have lights.
C. a sound alarm or a visual alarm
D. a sound and visual alarm

Question: The GPWS can warn the crew in case of: 1 - excessive climb rate **2 - unsafe terrain clearance when not in landing configuration** 3 - descent path angle greater than 5 degrees **4 - windshear** The combination that regroups all of the correct statements is:

Question: The input data to the GPWS originate from the: 1 - transponder 2 - angle of attack sensor 3 - auto throttle system **4 - ADC** The combination that regroups all of the correct statements is:

Question: The requirement to carry a GPWS (Ground Proximity Warning System) concerns aeroplanes which are, depending on their age, weight and passenger capacity : **1- turboprop-powered** 2- piston-powered **3- jet-powered** The combination regrouping all the correct statements is :

Question: The GPWS automatically provides distinctive warning to the flight crew in case of: 1 - impeding stall **2 - excessive descent rate 3 - altitude loss after take-off or go-around 4 - unsafe terrain clearance with flaps not in landing configuration 5 - dangerous ground proximity 6 - downward glide-slope deviation** The combination that regroups all of the correct statements is:

Question: The GPWS warns the crew in case of: 1 - deviation above or below the selected altitude. 2 - deviation below the selected altitude. **3 - unsafe terrain clearance with flaps not in landing configuration. 4 - unsafe terrain clearance with landing gear not down.**The combination that regroups all of the correct statements is:

Question: When required, the ground proximity warning system (GPWS) must automatically provide distinctive warning to the flight crew of: 1 - impeding stall **2 - excessive sink rate 3 - altitude loss after take-off or go-around 4 - incorrect landing configuration 5 - dangerous ground proximity 6 - downward glide-slope deviation** The combination regrouping all the correct statements is:

Question: The inputs to the GPWS (Ground Proximity Warning System), are: **1- Air Data Computer - (Mach number and Vertical Speed) 2- Radio Altimeter 3- NAV/ILS (Glide Slope)** 4- NAV/VOR **5- Flap (position)** 6- Weight of the aircraft **7- Landing Gear (position)**The combination of correct statement is:

Question: The GPWS CPU (Central Processing Unit) is able to detect: **1- excessive descent rate. 2- excessive rate of terrain closure.** 3- excessive angle of attack. 4- too high descent attitude. **5- loss of altitude after take-off. 6- abnormal gear/flaps configuration. 7- excessive glidepath deviation.** The combination that regroups all of the correct statements is:

Question: The GPWS can warn the crew in case of: 1 - excessive deviation below selected altitude **2 - windshear 3 - excessive terrain closing rate** The combination that regroups all of the correct statements is:

Question: The GPWS warns the crew in case of: **1 - excessive descent rate 2 - excessive terrain closure rate** 3 - potential midair collision threat 4 - serious midair collision threat **5 - unsafe terrain clearance with landing gear not down** The combination that regroups all of the correct statements is:

Question: The EGPWS may propose the following functions: 1 - Abnormal Take-off Configuration (ATC**) 2 - Terrain Clearance Floor (TCF)** 3 - Predictive Wind Shear (PWS**) 4 - Terrain Look Ahead Alerting 5 - Terrain Alerting and Display (TAD)** The combination regrouping all of the correct statements is:

Question: The Ground Proximity Warning System (GPWS) is a system working according to a height span ranging from:

- **A. 50 ft to 2 500 ft**
- B. the ground to 1 000 ft
- C. the ground to 500 ft
- D. 30 ft to 5 000 ft

Question: The EGPWS may propose the Terrain Look-Ahead Alerting function; this function uses:

- A. the weather radar to detect any high ground in conflict with the flight path of the aircraft.
- B. a specific radar to detect any high ground in conflict with the flight path of the aircraft.
- C. the same caution and warning envelopes than the mode 2 GPWS (excessive terrain closure rate).
- **D. an electronic map of the world giving ground elevation.**

Question: The CVR (Cockpit Voice Recorder) includes: **1. a microphone 2. a recorder in compliance with the shock and fire resistance standards** 3. an independent battery 4. a flight data recorder The combination regrouping all the correct statements is:

Question: According to CS25, a CVR (Cockpit Voice Recorder) must record: **1 - communications transmitted from or received in the aeroplane by radio 2 - communications of flight-crew members on the flight deck 3 - communications of flight-crew members on the flight deck using the aeroplane's interphone system 4 - audio signals identifying navigation or approach aids introduced into a headset or speaker** The combination regrouping all the correct statements is:

Question: When pressing the push button EVENT on the unit control of flight data recorder:

A. the recording is automatically stopped upon this event.
B. the recording is rewound so that whatever happens after this event is recorded.
C. a event mark is set on the recording, after that the recording is automatically stopped.
D. a mark is set on the recording, enabling this event to be found rapidly at a subsequent analysis.

Question: Except for airplanes under 5,7 t airworthiness certificate of which is subsequent to 31 march 1998, a flight data recording system must be able to store the recorded data for a minimum of the last :

A. 25 hours.
B. 30 minutes.
C. 60 minutes.
D. 10 hours.

Question: In an on-board computer, the software is

A. resident in a random access memory (RAM)
B. resident in a read-only memory (REPROM, EEPROM,...)
C. loaded from a hard disk
D. loaded from a floppy disk

Question: In a computer architecture, the software is defined as:

A. The physical components of a computer system.
B. The storage structure inside the central processing unit (CPU).
C. The volatile memory (RAM, random access memory).
D. A collection of computer programmes.

Question: Which of the statements about computer architecture are correct or incorrect? **1 - The software part includes the programmes that make up the operating system (OS). 2 - The hardware part includes the physical components of the computer.**

Question: Which of the statements about computer architecture are correct or incorrect? 1 - The software part does not include the programmes that make up the operating system (OS). **2 - The hardware part includes the physical components of the computer.**

Question: In a computer architecture, the hardware is defined as:

A. The physical components of a computer system.
B. The programmes which make up the operating system (OS).
C. The non-volatile memory (ROM, read only memory).
D. The non-volatile memory (RAM, random access memory).

Question: In a basic computer, the input and output devices are typically: **1 - A printer 2 - A keyboard 3 - A display 4 - An optical disc** The combination that regroups all of the correct statements is:

Question: A basic computer (""Von Neumann Architecture"" type) consists of the following components: **1. An arithmetic and logic unit (ALU) 2. A control unit 3. A memory 4. Input and output devices**

Question: A basic computer ("Von Neumann Architecture" type) consists of the following components: 1. A cache memory **2. A single separate storage structure 3. A central processing unit (CPU)** 4. An asymmetric and logic unit (ALU) The combination that regroups all the correct statements is:

Question: In a computer architecture, a bus is a system that:

- **A. Transfers data between computer components.**
- B. Ensures sequencing and co-ordination of operations.
- C. Performs basic arithmetic operations.
- D. Performs basic logic operations.

Question: In a computer architecture, which of these statements about a bus are correct or incorrect? 1 - A bus ensures sequencing and co-ordination of operations. **2 - A bus transfers data between computer components.**

Question: In a computer architecture, the system that ensures the transfer of data between computer components is:

- **A. A bus.**
- B. A control unit.
- C. Memory.
- D. An arithmetic and logic unit (ALU).

Question: A basic computer ("Von Neumann Architecture" type) uses:

- A. A control unit and two storage structures: one for instructions, another for data.
- B. A control unit which is a user/computer interface.
- C. An arithmetic and logic unit (ALU) to store the instructions.
- **D. A processing unit and a single storage storage structure to hold both instructions and data.**

Question: In a basic computer ("Von Neumann Architecture" type), the central processing unit (CPU) includes:

- A. The arithmetic and logic unit (ALU) only.
- B. A control unit and the main memory.
- C. An arithmetic and logic unit (ALU) and the main memory.
- **D. An arithmetic and logic unit (ALU) and control unit.**

Question: The Central Processing Unit (CPU) of a computer essentially consists of**: 1. an Arithmetic and Logic Unit (ALU) 2. a control and timing unit 3. registers** The combination which regroups all the correct statements is:

Question: In a basic computer ("Von Neumann Architecture" type), the memory:

- A. Is included in the central processing unit (CPU).
- B. Is linked to the control unit only.
- C. Only holds data.
- **D. Holds both instructions and data.**

Question: In a basic computer (""Von Neumann Architecture"" type), which of these statements about the memory are correct or incorrect? 1 - It holds data only. **2 - It is linked to both, the control unit and to the arithmetic and logic unit.**

Question: Which of these statements about computer architecture are correct or incorrect? 1 - Multitasking and multiprocessing are based on the same hardware configuration. **2 - Multitasking method is a software solution.**

Question: In computing, what is meant by the term 'multitasking'?

A. Two or more central processing units (CPUs) are used within a single computer.
B. Multiple tasks are carried out by several processors.
C. Two or more arithmetic and logic units (ALUs) are used within a single computer.
D. Multiple tasks share common resources, such as the same central processing unit (CPU).

Question: In computing, which of these statements about multitasking are correct or incorrect? **1 - Multitasking gives the appearance of running several programs simultaneously. 2 - The central processing unit (CPU) switches rapidly between each programme in turn.**

Question: Which of the statements about computer architecture are correct or incorrect**? 1 - The software part includes the programmes that make up the operating system (OS).** 2 - The hardware part does not include the physical components of the computer.

Question: Which of the statements about computer architecture are correct or incorrect? 1 - The software part does not include the programmes that make up the operating system (OS). 2 - The hardware part does not include the physical components of the computer.

Question: Computer main memory comes in two principal varieties:

A. Data memory and instruction memory.
B. Random access memory (RAM) and read-only memory (ROM).
C. Arithmetic memory and logic memory.
D. Software memory and hardware memory.

Question: In computing, what is meant by the term 'multiprocessing'?

A. Two or more central processing units (CPUs) are used within a single computer.
B. Multiple tasks share common resources, such as the same central processing unit (CPU).
C. Multiple tasks share common resources, such as the same arithmetic and logic unit (ALU).
D. Two or more random access memory (RAM) structures are used for a rapid access to data and instructions.

Question: Which of these statements about computer architecture are correct or incorrect? 1 - Multiprocessing configuration is a software solution. **2 - Multiprocessing configuration results in more powerful performance than the multitasking method.**

Question: Which of these statements about computer architecture are correct or incorrect? **1 - Multiprocessing configuration is a hardware solution**. 2 - Multitasking method results in more powerful performance than multiprocessing configuration.

Question: The characteristics of the random access memory (RAM) are: **1 - Rapid access 2 - Read and write access 3 - Volatile type** The combination that regroups all of the correct statements is:

Question: In computing, what is the function of the arithmetic and logic unit (ALU)?

A. It is a digital circuit that performs basic operations.
B. It decodes instructions in the programme step by step.
C. It controls the flow of data through the compressor.
D. It directs the various computers of a computer.

Question: In computing, a digital circuit that performs basic operations is:

A. A control unit.
B. A central processing unit (CPU).
C. A microprocessor.
D. An arithmetic and logic unit (ALU).

Question: In computing, the unit which ensures sequencing and co-ordination of operations is (are) the:

A. Arithmetic and logic unit (ALU).
B. Central processing unit (CPU).
C. Input and output devices.
D. Control unit.

Question: In computing, what is the function of a control unit?

A. It ensures sequencing and co-ordination of operations.
B. It is a user/computer interface.
C. It performs complex arithmetic operations.
D. It performs simple arithmetic operations.

Question: In computing, what is the function of a control unit? **1 - It controls the flow of data through the processor.** 2 -It performs basic operations. **3 - It co-ordinates the activities of the other units with the processor.** 4 - It stores all the instructions. The combination that regroups all the correct statements is:

Question: The software used to run the ATSU applications (ATC and AOC):

A. Is certified according to CS25/CS29.
B. Is certified according to an equipment certification standard (ED12B, DO178B).
C. Is only approved and tested by the manufacturer.
D. Is only approved and tested by the company.

Question: For a large transport aeroplane equipped with a fly-by-wire flight control system, the software used for flight controls:

A. Is only approved and tested by the company.
B. Is only approved and tested by the manufacturer.
C. Is certified at the highest level of safety (level A).
D. Is certified at the lowest level of safety (level E).

Question: Regarding the operating system used for an on-board documentation (charts and company information):

A. There are no certification requirements.
B. The certification requirements are detailed in EUROCAE standars.
C. The certification requirements are detailed in EU-OPS.
D. The certification requirements are detailed in CS 25/29.

Question: For a large transport aeroplane equipped with a fly-by-wire flight control system and an FMS:

A. The operating system of the FMS is certified at a level higher than the software used for flight controls.
B. The operating system of the FMS encompasses the software used for the fly-by-wire flight control system.
C. The operating system of the FMS is certified at a level equal or lower than the software used for flight controls.
D. The software of the FMS encompasses the software used for the fly-by-wire flight control system.
