Titel: PRINCIPLES OF FLIGHT

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Abstrakt: Themenbezogene Sammlung von ATPL-Prüfungsfragen, ohne Gewähr auf Aktualität bzw. Vollständigkeit

Gleichbehandlungsklausel: Der einfacheren Lesbarkeit halber werden personenbezogene Bezeichnungen in grammatikalisch geschlechtsneutraler oder männlicher Form verwendet. Die gewählte Form gilt jedoch stets für beide Geschlechter und soll keinerlei Diskriminierung zum Ausdruck bringen.

1 Considering a positive cambered aerofoil, the pitching moment when Cl=0 is:

   A infinite
   B positive (nose-up).
   C negative (nose-down).
   D equal to zero.

2 The angle between the aeroplane longitudinal axis and the chord line is the:

   A angle of incidence.
   B glide path angle.
   C angle of attack.
   D climb path angle.

3 Which of the following wing planforms gives the highest local lift coefficient at the wing root ?

   A Elliptical.
   B Rectangular.
   C Positive angle of sweep.
   D Tapered.

4 An aeroplane maintains straight and level flight while the IAS is doubled. The change in lift coefficient will be:

   A x 0.25
   B x 2.0
   **C** x 0.5
   D x 4.0

5 The stall speed increases, when: (all other factors of importance being constant)

   A weight decreases.
   B pulling out of a dive.
   C spoilers are retracted.
   D minor altitude changes occur e.g. 0-10.000 ft.

6 In which phase of the take-off is the aerodynamic effect of ice located on the wing leading edge most critical?

   A The last part of the rotation.
   B The take-off run.
   C During climb with all engines operating.
   D All phases of the take-off are equally critical.

7 Assuming ISA conditions, which statement with respect to the climb is correct ?

   A At constant TAS the Mach number decreases
   B At constant Mach number the IAS increases
   C At constant IAS the TAS decreases
   D At constant IAS the Mach number increases

8 The speed range between high- and low speed buffet:

   A decreases during a descent at a constant Mach number.

   B is always positive at Mach numbers below MMO.

   C increases during a descent at a constant IAS.

   D increases during climb.

9 When the air is passing through an expansion wave the static temperature will

   A decrease.

   B increase.

   C stay constant.

   D decrease and beyond a certain Mach number start increasing again.

10 If the sum of all the moments in flight is not zero, the aeroplane will rotate about the:

   A centre of gravity.

   B neutral point of the aeroplane.

   C aerodynamic centre of the wing.

   D centre of pressure of the wing.

11 Following a disturbance, an aeroplane oscillates about the lateral axis at a constant amplitude. The aeroplane is:

   A statically stable - dynamically neutral

   B statically unstable - dynamically stable

   C statically stable - dynamically unstable

   D statically unstable - dynamically neutral

12 The cg of an aeroplane is in a fixed position forward of the neutral point. Speed changes cause a departure from the trimmed position. Which of the following statements about the stick force stability is correct?

   A An increase of 10kt from the trimmed position at low speed has more effect on the stick force than an increase of 10kt from the trimmed position at high speed.

   B Increase of speed generates pull forces.

   C Aeroplane nose up trim decreases the stick force stability.

   D Stick force stability is not affected by trim.

13 Positive static lateral stability is the tendency of an aeroplane to:

   A roll to the right in the case of a positive sideslip angle (aeroplane nose to the right).

   B roll to the left in the case of a positive sideslip angle (aeroplane nose to the left).

   C roll to the left in a right turn.

   D roll to the right in a right turn.

14 What is the effect of an aft shift of the centre of gravity on (1) static longitudinal stability and (2) the required control deflection for a given pitch change?

   A (1) reduces   (2) increases

   B (1) increases   (2) increases

   C (1) increases   (2) reduces

   D (1) reduces   (2) reduces
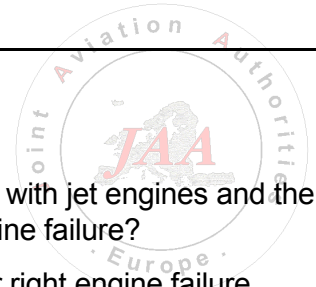
15 Given two identical aeroplanes with wing mounted engines, one fitted with jet engines and the other with counter rotating propellers, what happens following an engine failure?

A The same yaw tendency for both aeroplanes regardless of left or right engine failure.

B More roll tendency for the propeller aeroplane.

C Less roll tendency for the propeller aeroplane.

D The same roll tendency for both aeroplanes.

16 An aeroplane has a servo tab controlled elevator. What will happen if the elevator jams during flight?

A Pitch control is lost.

B Pitch control sense is reversed.

C The pitch control forces double.

D The servo-tab now works as a negative trim-tab.

17 Which statement about a jet transport aeroplane is correct during take-off with the cg at the forward limit and the trimmable horizontal stabiliser (THS) positioned at the maximum allowable aeroplane nose down position?

A If the THS position is just within the limits of the green band, the take off warning system will be activated.

B The rotation will require extra stick force.

C Rotation will be normal.

D Early nose wheel raising will take place.

18 What can happen to the aeroplane structure flying at a speed just exceeding VA ?

A It may suffer permanent deformation if the elevator is fully deflected upwards

B It may break if the elevator is fully deflected upwards.

C It may suffer permanent deformation because the flight is performed at too large dynamic pressure.

D It will collapse if a turn is made.

19 Which definition of propeller parameters is correct?

A Geometric pitch is the theoretical distance a propeller blade element would travel in a forward direction during one revolution.

B Blade angle is the angle between the blade chord line and the propeller axis.

C Angle of attack is the angle between the blade chord line and the propeller vertical plane.

D Critical tip velocity is the propeller speed at which flow separation first occurs at some part of the blade.

20 Asymmetric propeller blade effect is mainly induced by:

A large angles of yaw.

B large angles of climb.

C the inclination of the propeller axis to the relative airflow.

D high speed.
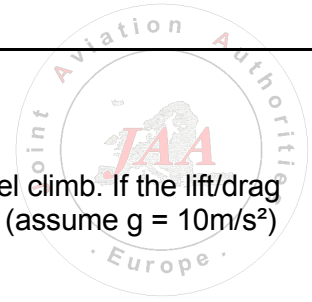
21 A 50 ton twin engine aeroplane performs a straight, steady, wings level climb. If the lift/drag ratio is 12 and the thrust is 60 000N per engine, the climb gradient is: (assume g = 10m/s²)

   A   3.7%.
   B   15.7%.
   C   12%.
   D   24%.

22 An aeroplane performs a right turn, the slip indicator is left of neutral. One way to co-ordinate the turn is to apply:

   A   more right rudder.
   B   more left rudder.
   C   a higher turn-rate.
   D   less right bank.

23 The speed for minimum glide angle occurs at an angle of attack that corresponds to: (assume zero thrust; ^ … denotes power of …)

   A   (CL/CD^2)max
   B   (CL^3/CD^2)max
   C   (CL/CD)max
   D   CLmax