Examination Center DGAC

Examination Date ____________________________

Name ____________________________

Firstname ____________________________

Birthday ____________________________

1 The angle of attack (aerodynamic angle of incidence) of an aerofoil is the angle between the: (1.00 P.)

[A] chord line and the relative undisturbed airflow.

[B] bottom surface and the chord line.

[C] bottom surface and the relative airflow.

[D] bottom surface and the horizontal

2 In a stationary subsonic streamline flow pattern, if the streamlines converge, in this part of the pattern, the static pressure (I) will ...and the velocity (II) will ...: (1.00 P.)

[A] (I) increase, (II) increase.

[B] (I) increase, (II) decrease.

[C] (I) increase, (II) decrease.

[D] (I) decrease, (II) increase.

3 The SI units of air density (I) and force (II) are: (1.00 P.)

[A] (I) kg / m3, (II) N.

[B] (I) N / m3, (II) N.

[C] (I) N / kg, (II) kg.

[D] (I) kg / m^2, (II) kg.

4 The units of wing loading (I) W / S and (II) dynamic pressure q are: (1.00 P.)

[A] (I) kg / m, (II) N / m^2.

[B] (I) N / m, (II) kg.

[C] (I) N / m^2, (II) N / m^2.

[D] (I) N / m3, (II) kg / m^2.

5 Which formula or equation describes the relationship between force (F), acceleration (a) and mass (m)? (1.00 P.)

[A] F=m. a

[B] F=m / a

[C] a=F. m

[D] m=F.a

6 Static pressure acts: (1.00 P.)

[A] only in direction of the flow.

[B] only in the direction of the total pressure.

[C] only perpendicular to the direction of the flow.

[D] in all directions.

7 Lift is generated when: (1.00 P.)

[A] a certain mass of air is retarded.

[B] a certain mass of air is accelerated in its flow direction.

[C] a symmetrical aerofoil is placed in a high velocity air stream at zero angle of attack.

[D] the flow direction of a certain mass of air is changed.

8 Consider the steady flow through a stream tube where the velocity of the stream is V. An increase in temperature of the flow at a constant value of V will: (1.00 P.)

[A] increase the mass flow when the tube is divergent in the direction of the flow.

[B] decrease the mass flow.

[C] increase the mass flow.

[D] not affect the mass flow.

9 Which one of the following statements about Bernoulli's theorem is correct? (1.00 P.)

[A] The dynamic pressure increases as static pressure decreases.

[B] The total pressure is zero when the velocity of the stream is zero.

[C] The dynamic pressure is maximum in the stagnation point.

[D] The dynamic pressure decreases as static pressure decreases.

10 If in a two-dimensional incompressible and subsonic flow, the streamlines converge the static pressure in the flow will: (1.00 P.)

[A] increase initially, then decrease.

[B] not change.

[C] decrease.

[D] increase.

11 Bernoulli's equation can be written as:
(pt= total pressure, ps = static pressure and q=dynamic pressure) (1.00 P.)

[A] pt = ps - q

[B] pt = q - ps

[C] pt = ps / q

[D] pt = ps + q

12 Which of the following statements about boundary layers is correct? (1.00 P.)

[A] The turbulent boundary layer is thinner than the laminar boundary layer.

[B] The turbulent boundary layer gives a lower skin friction than the laminar boundary layer.

[C] The turbulent boundary layer has more kinetic energy than the laminar boundary layer.

[D] The turbulent boundary layer will separate more easily than the laminar boundary layer.

13 Where on the surface of a typical aerofoil will flow separation normally start at high angles of attack? (1.00 P.)

[A] upper side leading edge.

[B] lower side leading edge.

[C] lower side trailing edge.

[D] upper side trailing edge.

14 On an asymmetrical, single curve aerofoil, in subsonic airflow, at low angle of attack, when the angle of attack is increased, the centre of pressure will (assume a conventional transport aeroplane): (1.00 P.)

[A] remain unaffected.

[B] remain matching the airfoil aerodynamic centre.

[C] move forward.

[D] move aft.

15 The angle of attack of a two dimensional wing section is the angle between: (1.00 P.)

[A] the chord line of the aerofoil and the free stream direction.

[B] the fuselage centreline and the free stream direction.

[C] the chord line and the camber line of the aerofoil.

[D] the chord line of the aerofoil and the fuselage centreline.

16 The angle between the airflow (relative wind) and the chord line of an aerofoil is: (1.00 P.)

[A] angle of attack.

[B] same as the angle between chord line and fuselage axis.

[C] glide path angle.

[D] climb path angle.

17 The angle between the aeroplane longitudinal axis and the chord line is the: (1.00 P.)

[A] angle of attack.

[B] glide path angle.

[C] angle of incidence.

[D] climb path angle.

18 With increasing angle of attack, the stagnation point will move (I) ...and the point of lowest pressure will move (II) ...Respectively (I) and (II) are: (1.00 P.)

[A] (I) down, (II) forward.

[B] (I) down, (II) aft.

[C] (I) up, (II) forward.

[D] (I) up, (II) aft.

19 The aerodynamic centre of the wing is the point, where: (1.00 P.)

[A] the aeroplane's lateral axis intersects with the centre of gravity.

[B] changes of lift due to variations in angle of attack are constant.

[C] the pitching moment coefficient does not vary with angle of attack.

[D] aerodynamic forces are constant.

20 "Flutter" may be caused by: (1.00 P.)

[A] roll control reversal.

[B] high airspeed aerodynamic wing stall.

[C] low airspeed aerodynamic wing stall.

[D] distortion by bending and torsion of the structure causing increasing vibration in the resonance frequency.

21 On a swept wing aeroplane at low airspeed, the "pitch up" phenomenon: (1.00 P.)

[A] is caused by boundary layer fences mounted on the wings.

[B] never occurs, since a swept wing is a "remedy" to pitch up.

[C] is caused by extension of trailing edge lift augmentation devices.

[D] is caused by wingtip stall.

22 Low speed pitch up is caused by the: (1.00 P.)

[A] spanwise flow on a swept back wing.

[B] spanwise flow on a swept forward wing.

[C] Mach trim system.

[D] wing tip vortex.

23 The lift coefficient (CL) of an aeroplane in steady horizontal flight is 0.42. An increase in angle of attack of 1 degree increases CL by 0.1. A vertical up gust instantly changes the angle of attack by 3 degrees. The load factor will be: (1.00 P.)

[A] 1.49

[B] 2.49

[C] 0.74

[D] 1.71

24 The aeroplane drag in straight and level flight is lowest when the: (1.00 P.)

[A] induced drag is lowest.

[B] induced drag is equal to zero.

[C] parasite drag is equal to the induced drag.

[D] parasite drag equals twice the induced drag.

25 Considering a positive cambered aerofoil, the pitching moment when Cl=0 is: (1.00 P.)

[A] negative (nose-down).

[B] infinite

[C] equal to zero.

[D] positive (nose-up).

26 On a symmetrical aerofoil, the pitching moment for which Cl=0 is: (1.00 P.)

[A] equal to the moment coefficient for stabilized angle of attack.

[B] zero

[C] negative (pitch-down)

[D] positive (pitch-up)

27 On a un-swept wing, when the aerofoil is accelerated from subsonic to supersonic speeds, the aerodynamic centre: (1.00 P.)

[A] remains unchanged.

[B] slightly shifts forward.

[C] shifts aft by about 10%.

[D] shifts from 25% to about 50% of the aerofoil chord.

28 The lift coefficient (CL) of an aeroplane in steady horizontal flight is 0.4. An increase in angle of attack of 1 degree will increase CL by 0.09. A vertical up gust instantly changes the angle of attack by 5 degrees. The load factor will be: (1.00 P.)

[A] 3.18

[B] 1.09

[C] 2.0

[D] 2.13

29 An aeroplane maintains straight and level flight while the IAS is doubled. The change in lift coefficient will be: (1.00 P.)

[A] x 0.5

[B] x 0.25

[C] x 4.0

[D] x 2.0

30 The effect of a positive wing sweep on static directional stability is as follows: (1.00 P.)

[A] Destabilizing dihedral effect

[B] Negative dihedral effect

[C] Stabilizing effect

[D] No effect

31 The effect on static stability of an aeroplane with a high wing as compared to a low wing is: (1.00 P.)

[A] zero dihedral effect

[B] no effect as it is only used to improve aeroplane loading

[C] a negative dihedral effect

[D] a positive dihedral effect

32 The lift coefficient (CL) of an aeroplane in steady horizontal flight is 0.35. An increase in angle of attack of 1 degree would increase CL by 0.079. If a vertical gust instantly changes the angle of attack by 2 degrees, the load factor will be: (1.00 P.)

[A] 0.45

[B] 1.45

[C] 1.9

[D] 0.9

33 When an aeroplane is flying at an airspeed which is 1.3 times its basic stalling speed, the coefficient of lift as a percentage of the maximum lift coefficient (CLmax) would be: (1.00 P.)

[A] 77%.

[B] 130%.

[C] 59%.

[D] 169%.

34 The lift formula is: (1.00 P.)

[A] L= n W

[B] L= CL 2 RHO V^2 S

[C] L= W

[D] L= CL 1/2 RHO V^2 S

35 An aeroplane is in a level turn, at a constant TAS of 300 kt, and a bank angle of 45°. Its turning radius is:
(given: g= 10 m/s^2) (1.00 P.)

[A] 2381 metres.

[B] 9000 metres.

[C] 4743 metres.

[D] 3354 metres.

36 Which one of the following statements about the lift-to-drag ratio in straight and level flight is correct? (1.00 P.)

[A] The highest value of the lift/drag ratio is reached when the lift is equal to the aircraft weight.

[B] At the highest value of the lift/drag ratio the total drag is lowest.

[C] The lift/drag ratio always increases as the lift decreases.

[D] The highest value of the lift/drag ratio is reached when the lift is zero.

37 Drag is in the direction of - and lift is perpendicular to the: (1.00 P.)

[A] chord line.

[B] relative wind/airflow.

[C] horizon.

[D] longitudinal axis.

38 If the nose of an aeroplane yaws left, this causes: (1.00 P.)

[A] a roll to the right.

[B] an increase in lift on the left wing.

[C] a decrease in relative airspeed on the right wing.

[D] a roll to the left.

39 At an aeroplane's minimum drag speed, what is the ratio between induced drag Di and parasite drag Dp? Di/Dp= (1.00 P.)

[A] 1/2

[B] 2/1

[C] It varies between aeroplane types.

[D] 1/1

40 The correct drag formula is: (1.00 P.)

[A] D= CD 1/2 RHO V^2 S

[B] D= CD 2 RHO V^2 S

[C] D= CD 1/2 RHO V S

[D] D= CD 1/2 1/RHO V^2 S

41 The value of the parasite drag in straight and level flight at constant weight varies linearly with the: (1.00 P.)

[A] square of the speed.

[B] speed.

[C] angle of attack.

[D] square of the angle of attack.

42 An aeroplane accelerates from 80 kt to 160 kt at a load factor equal to 1. The induced drag coefficient (i) and the induced drag (ii) alter with the following factors: (1.00 P.)

[A] (i) 1/4 (ii) 2

[B] (i) 1/16 (ii) 1/4

[C] (i) 4 (ii) 1/2

[D] (i) 1/2 (ii) 1/16

43 What is the effect of high aspect ratio of an aeroplane's wing on induced drag? (1.00 P.)

[A] It is reduced because the effect of wing-tip vortices is reduced.

[B] It is increased because high aspect ratio produces greater downwash.

[C] It is unaffected because there is no relation between aspect ratio and induced drag.

[D] It is increased because high aspect ratio has greater frontal area.

44 In what way do (1) induced drag and (2) parasite drag alter with increasing speed in straight and level flight ? (1.00 P.)

[A] (1) decreases and (2) increases.

[B] (1) increases and (2) decreases.

[C] (1) increases and (2) increases.

[D] (1) decreases and (2) decreases.

45 Which of the following wing planforms produces the lowest induced drag? (all other relevant factors constant) (1.00 P.)

[A] Circular.

[B] Tapered.

[C] Elliptical.

[D] Rectangular.

46 If flaps are deployed at constant IAS in straight and level flight, the magnitude of tip vortices will eventually: (flap span less than wing span) (1.00 P.)

[A] remain the same.

[B] increase or decrease, depending on the initial angle of attack.

[C] decrease.

[D] increase.

47 The value of the induced drag of an aeroplane in straight and level flight at constant weight varies linearly with: (1.00 P.)

[A] V^2

[B] $1/V$

[C] V

[D] $1/V^2$

48 Induced drag at constant IAS is affected by: (1.00 P.)

[A] aeroplane weight.

[B] aeroplane wing location.

[C] angle between wing chord and fuselage centre line.

[D] engine thrust.

49 Which of the following will reduce induced drag? (1.00 P.)

[A] Elliptical lift distribution.

[B] Flying at high angles of attack.

[C] Low aspect ratio.

[D] Extending the flaps.

50 Induced drag is created by the: (1.00 P.)

[A] spanwise flow pattern resulting in the tip vortices.

[B] propeller wash blowing across the wing.

[C] interference of the air stream between wing and fuselage.

[D] separation of the boundary layer over the wing.

51 Vortex generators: (1.00 P.)

[A] take kinetic energy out of the boundary layer to reduce separation.

[B] change the turbulent boundary layer into a laminar boundary layer.

[C] transfer energy from the free airflow into the boundary layer.

[D] reduce the spanwise flow on swept wing.

52 How does the total drag vary as speed is increased from stalling speed (VS) to maximum IAS (VNE) in a straight and level flight at constant weight? (1.00 P.)

[A] Increasing, then decreasing.

[B] Increasing.

[C] Decreasing, then increasing.

[D] Decreasing.

53 A boundary layer fence on a swept wing will: (1.00 P.)

[A] improve the high speed characteristics.

[B] increase the critical Mach Number.

[C] improve the lift coefficient of the trailing edge flap.

[D] improve the low speed characteristics.

54 In order to perform a steady level turn at constant speed in an aeroplane, the pilot must: (1.00 P.)

[A] increase thrust/power and keep angle of attack unchanged.

[B] increase thrust/power and decrease angle of attack.

[C] increase angle of attack and keep thrust/power unchanged.

[D] increase thrust/power and angle of attack.

55 When an aeroplane with the centre of gravity forward of the centre of pressure of the combined wing / fuselage is in straight and level flight, the vertical load on the tailplane will be: (1.00 P.)

[A] upwards.

[B] downwards because it is always negative regardless of the position of the centre of gravity.

[C] downwards.

[D] zero because in steady flight all loads are in equilibrium.

56 In a twin engine jet aeroplane (engines mounted below the low wings) the thrust is suddenly increased. Which elevator deflection will be required to maintain the pitching moment zero ? (1.00 P.)

[A] No elevator movement will required because the thrust line of the engines remains unchanged.

[B] Down.

[C] Up.

[D] It depends on the position of the centre of gravity.

57 In which situation would the wing lift of an aeroplane in straight and level flight have the highest value ? (1.00 P.)

[A] Forward centre of gravity and idle thrust.

[B] Aft centre of gravity and take-off thrust.

[C] Forward centre of gravity and take-off thrust.

[D] Aft centre of gravity and idle thrust.

58 An aeroplane, with a C.G. location behind the centre of pressure of the wing can only maintain a straight and level flight when the horizontal tail loading is: (1.00 P.)

[A] upwards.

[B] upwards or downwards depending on elevator deflection.

[C] downwards.

[D] zero.

59 The centre of gravity moving aft will: (1.00 P.)

[A] increase or decrease the elevator up effectiveness, depending on wing location.

[B] decrease the elevator up effectiveness.

[C] not affect the elevator up or down effectiveness.

[D] increase the elevator up effectiveness.

60 If the total sum of moments about one of its axes is not zero, an aeroplane would: (1.00 P.)

[A] experience an angular acceleration about that axis.

[B] not be affected because the situation is normal.

[C] be difficult to control.

[D] fly a path with a constant curvature.

61 During landing of a low-winged jet aeroplane, the greatest elevator up deflection is normally required when the flaps are: (1.00 P.)

[A] up and the centre of gravity is fully forward.

[B] up and the centre of gravity is fully aft.

[C] fully down and the centre of gravity is fully forward.

[D] fully down and the centre of gravity is fully aft.

62 Rotation about the lateral axis is called: (1.00 P.)

[A] rolling.

[B] pitching.

[C] slipping.

[D] yawing.

63 Rolling is the rotation of the aeroplane about the: (1.00 P.)

[A] vertical axis.

[B] longitudinal axis.

[C] wing axis.

[D] lateral axis.

64 An aeroplane has static directional stability; in a side-slip to the right, initially the: (1.00 P.)

[A] nose of the aeroplane tends to move to the right.

[B] nose of the aeroplane will remain in the same direction.

[C] right wing tends to go down.

[D] nose of the aeroplane tends to move to the left.

65 The centre of gravity 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? (1.00 P.)

[A] Stick force stability is not affected by trim.

[B] Aeroplane nose up trim decreases the stick force stability.

[C] 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.

[D] Increase of speed generates pull forces.

66 The (1) stick force stability and the (2) manoeuvre stability are positively affected by: (1.00 P.)

[A] (1) trimming the aeroplane nose up (2) trimming the aeroplane nose up.

[B] (1) aft C.G. movement (2) aft CG. movement.

[C] (1) forward C.G. movement (2) trimming the aeroplane nose up.

[D] (1) forward C.G. movement (2) forward CG. movement.

67 The value of the manoeuvre stability of an aeroplane is 150 N/g. The stick force required to achieve a load factor of 2,5 from steady level flight is: (1.00 P.)

[A] 450 N.

[B] 150 N.

[C] 375 N.

[D] 225 N.

68 For a normal stable aeroplane, the centre of gravity is located: (1.00 P.)

[A] with a sufficient minimum margin ahead of the neutral point of the aeroplane.

[B] between the aft limit and the neutral point of the aeroplane.

[C] aft of the neutral point of the aeroplane.

[D] at the neutral point of the aeroplane.

69 The maximum aft position of the centre of gravity is, amongst others, limited by the: (1.00 P.)

[A] inability to achieve maximum rotation rate during take-off.

[B] required minimum value of the stick force per g.

[C] maximum elevator deflection.

[D] maximum longitudinal stability of the aeroplane.

70 Longitudinal static stability is created by the fact that the: (1.00 P.)

[A] centre of gravity is located in front of the leading edge of the wing.

[B] aeroplane possesses a large trim speed range.

[C] wing surface is greater than the horizontal tail surface.

[D] centre of gravity is located in front of the neutral point of the aeroplane.

71 Positive static stability of an aeroplane means that following a disturbance from the equilibrium condition: (1.00 P.)

[A] the initial tendency is to return towards its equilibrium condition.

[B] the tendency is to move with an oscillatory motion of decreasing amplitude.

[C] the tendency is to move with an oscillatory motion of increasing amplitude.

[D] the initial tendency is to diverge further from its equilibrium condition.

72 Following a disturbance, an aeroplane oscillates about the lateral axis at a constant amplitude. The aeroplane is: (1.00 P.)

[A] statically stable - dynamically unstable

[B] statically unstable - dynamically neutral

[C] statically stable - dynamically neutral

[D] statically unstable - dynamically stable

73 Which statement on dynamic longitudinal stability of a conventional aeroplane is correct? (1.00 P.)

[A] Speed remains constant during one period of the phugoid.

[B] Period time of the phugoid is normally 5 sec.

[C] Damping of the short period oscillation is normally very weak.

[D] Damping of the phugoid is normally very weak.

74 The "short period mode" is an: (1.00 P.)

[A] oscillation about the longitudinal axis.

[B] oscillation about the vertical axis.

[C] unstable movement of the aeroplane, induced by the pilot.

[D] oscillation about the lateral axis.

75 An aeroplane that has positive static stability: (1.00 P.)

[A] is always dynamically unstable.

[B] is never dynamically stable.

[C] is always dynamically stable.

[D] can be dynamically stable, neutral or unstable.

76 A statically unstable aeroplane is: (1.00 P.)

[A] sometimes dynamically stable.

[B] never dynamically stable.

[C] sometimes dynamically unstable.

[D] always dynamically stable.

77 One of the requirements for positive dynamic stability is: (1.00 P.)

[A] an effective elevator.

[B] a small cg range.

[C] a large deflection range of the stabilizer trim.

[D] positive static stability.

78 Which of the following statements about dihedral is correct? (1.00 P.)

[A] Dihedral contributes to dynamic but not to static lateral stability.

[B] Dihedral is necessary for the execution of slip-free turns.

[C] The "effective dihedral" of an aeroplane component means the contribution of that component to the static lateral stability.

[D] Effective dihedral is the angle between the 1/4-chord line and the lateral axis of the aeroplane.

79 How does positive camber of an aerofoil affect static longitudinal stability ? It has (1.00 P.)

[A] no effect, because camber of the aerofoil produces a constant pitch down moment coefficient, independent of angle of attack.

[B] positive effect, because the centre of pressure shifts rearward at increasing angle of attack.

[C] negative effect, because the lift vector rotates forward at increasing angle of attack.

[D] positive effect, because the lift vector rotates backward at increasing angle of attack.

80 Which of the following lists contain aeroplane design features that all increase static lateral stability? (1.00 P.)

[A] Fuselage mounted engines, dihedral, T-tail.

[B] High wing, sweep back, large and high vertical fin.

[C] Sweep back, under wing mounted engines, winglets.

[D] Low wing, dihedral, elliptical wing planform.

81 Which wing design feature decreases the static lateral stability of an aeroplane? (1.00 P.)

[A] Anhedral.

[B] High wing.

[C] Increased wing span.

[D] Dihedral.

82 The manoeuvrability of an aeroplane is best when the: (1.00 P.)

[A] C.G. position is on the forward C.G. limit.

[B] flaps are down.

[C] C.G. is on the aft C.G. limit.

[D] speed is low.

83 The effect of a ventral fin on the static stability of an aeroplane is as follows: (1=longitudinal, 2=lateral, 3=directional) (1.00 P.)

[A] 1: positive, 2: negative, 3: negative

[B] 1: no effect, 2: negative, 3: positive

[C] 1: no effect, 2: positive, 3: negative

[D] 1: negative, 2: positive, 3: positive

84 Which of the following statements about static lateral and directional stability is correct? (1.00 P.)

[A] The effects of static lateral and static directional stability are completely independent of each other because they take place about different axes.

[B] An aeroplane with an excessive static directional stability in relation to its static lateral stability, will be prone to "Dutch roll".

[C] An aeroplane with an excessive static directional stability in relation to its static lateral stability, will be prone to spiral dive (spiral instability).

[D] Static directional stability can be increased by installing more powerful engines.

85 Which moments or motions interact in a dutch roll? (1.00 P.)

[A] Pitching and rolling.

[B] Pitching and adverse yaw.

[C] Rolling and yawing.

[D] Pitching and yawing.

86 Extension of FOWLER type trailing edge lift augmentation devices, will produce: (1.00 P.)

[A] a force which reduces drag.

[B] a nose-up pitching moment.

[C] no pitching moment.

[D] a nose-down pitching moment.

87 With increasing altitude and constant IAS the static lateral stability (1) and the dynamic lateral/directional stability (2) of an aeroplane with swept-back wing will: (1.00 P.)

[A] (1) increase (2) decrease.

[B] (1) decrease (2) decrease.

[C] (1) decrease (2) increase.

[D] (1) increase (2) increase.

88 Which one of the following systems suppresses the tendency to "Dutch roll"? (1.00 P.)

[A] Spoiler mixer.

[B] Roll spoilers.

[C] Rudder limiter.

[D] Yaw damper.

89 Which aeroplane behaviour will be corrected by a yaw damper ? (1.00 P.)

[A] Spiral dive.

[B] Dutch roll.

[C] Buffeting.

[D] Tuck under.

90 Compared with level flight prior to the stall, the lift (1) and drag (2) in the stall change as follows: (1.00 P.)

[A] (1) decreases (2) increases.

[B] (1) decreases (2) decreases.

[C] (1) increases (2) increases.

[D] (1) increases (2) decreases.

91 Entering the stall the centre of pressure of a straight (1) wing and of a strongly swept back wing (2) will: (1.00 P.)

[A] (1) move aft, (2) move aft.

[B] (1) move aft, (2) not move.

[C] (1) move aft, (2) move forward.

[D] (1) not move (2) move forward.

92 081-001.jpg
A jet transport aeroplane weighing 100 tons carries out a steady level 50 degree bank turn at FL350. The buffet free speed range from low speed to high speed buffet extends from: (1.00 P.)

Siehe Anlage 1

[A] M 0.72 to > M 0.84

[B] M 0.69 to > M 0.84

[C] M 0.74 to M 0.84

[D] M 0.65 to > M 0.84

93 Which of the following statements about stall speed is correct ? (1.00 P.)

[A] Increasing the angle of sweep of the wing will decrease the stall speed.

[B] Use of a T-tail will decrease the stall speed..

[C] Decreasing the angle of sweep of the wing will decrease the stall speed.

[D] Increasing the anhedral of the wing will decrease the stall speed.

94 Which of the following statements about the spin is correct? (1.00 P.)

[A] An aeroplane is prone to spin when the stall starts at the wing root.

[B] During spin recovery the ailerons should be kept in the neutral position.

[C] In the spin, airspeed continuously increases.

[D] Every aeroplane should be designed such that it can never enter a spin.

95 Which of the following statements about a Mach trimmer is correct? (1.00 P.)

[A] A straight wing aeroplane always needs a Mach trimmer for flying at Mach numbers close to MMO.

[B] The Mach trimmer corrects the natural tendency of a swept wing aeroplane to pitch-up.

[C] A Mach trimmer reduces the stick force stability of a straight wing aeroplane to zero at high Mach numbers.

[D] A Mach trimmer corrects the change in stick force stability of a swept wing aeroplane above a certain Mach number.

96 During an erect spin recovery: (1.00 P.)

[A] the control stick is moved side ways, in the direction of the angle of bank.

[B] the control stick is moved side ways, against the angle of bank.

[C] the ailerons are held in the neutral position.

[D] the control stick is pulled to the most aft position.

97 Which of the following statements about the stall of a straight wing aeroplane is correct? (1.00 P.)

[A] The nose down effect is the result of increasing downwash, due to flow separation.

[B] Buffeting is the result of tailplane flow separation..

[C] The horizontal tail will stall at a higher speed than the wing.

[D] Just before the stall the aeroplane will be have an increased nose-down tendency.

98 How is stall warning presented to the pilots of a large transport aeroplane ? (1.00 P.)

[A] stick pusher.

[B] stall warning light only.

[C] stick shaker and/or aerodynamic buffet.

[D] aural warning only.

99 The vane of a stall warning system with a flapper switch is activated by the change of the: (1.00 P.)

[A] point of lowest pressure.

[B] stagnation point.

[C] centre of gravity.

[D] centre of pressure.

100 Which combination of design features is known to be responsible for deep stall? (1.00 P.)

[A] Straight wings and a T-tail.

[B] Swept back wings and a T-tail.

[C] Straight wings and aft fuselage mounted engines

[D] Swept back wings and wing mounted engines.

101 When a strongly swept back wing stalls and the wake of the wing contacts the horizontal tail, the effect on the stall behaviour can be a(n): (1.00 P.)

[A] nose down tendency.

[B] increase in sensitivity of elevator inputs.

[C] nose up tendency and/or lack of elevator response.

[D] tendency to increase speed after initial stall.

102 By what percentage does the lift increase in a level turn at 45° angle of bank, compared to straight and level flight? (1.00 P.)

[A] 19%.

[B] 31%.

[C] 52%.

[D] 41%.

103 In a steady level, co-ordinated turn, the load factor n and the stalling speed VS will be: (1.00 P.)

[A] n smaller than 1, VS lower than in straight and level flight.

[B] n greater than 1, VS lower than in straight and level flight.

[C] n smaller than 1, VS higher than in straight and level flight.

[D] n greater than 1, VS higher than in straight and level flight.

104 On a wing fitted with a "fowler" type trailing edge flap, the "Full extended" position will produce: (1.00 P.)

[A] an unaffected wing area and increase in camber.

[B]

an increase in wing area only.

[C] an increase in wing area and camber.

[D] an unaffected CD, at a given angle of attack.

105 When flaps are extended in a straight and level flight at constant IAS, the lift coefficient will eventually: (1.00 P.)

[A] first increase and then decrease.

[B] decrease.

[C] remain the same.

[D] increase.

106 When flaps are deployed at constant angle of attack the lift coefficient will: (1.00 P.)

[A] decrease.

[B] increase.

[C] vary as the square of IAS.

[D] remain the same.

107 Trailing edge flap extension will: (1.00 P.)

[A] increase the critical angle of attack and decrease the value of CLmax.

[B] increase the critical angle of attack and increase the value of CLmax.

[C] decrease the critical angle of attack and increase the value of CLmax.

[D] decrease the critical angle of attack and decrease the value of CLmax.

108 Which of the following statements about the difference between Krueger flaps and slats is correct? (1.00 P.)

[A] Deploying a Krueger flap will increase critical angle of attack, deploying a slat does not.

[B] Deploying a Krueger flap will form a slot, deploying a slat does not.

[C] Deploying a slat will form a slot, deploying a Krueger flap does not.

[D] Deploying a slat will increase critical angle of attack, deploying a Krueger flap does not.

109 What is the most effective flap system? (1.00 P.)

[A] Split flap.

[B] Plain flap.

[C] Single slotted flap.

[D] Fowler flap.

110 Deploying a Fowler flap, the flap will: (1.00 P.)

[A] just move aft.

[B] move aft, then turn down.

[C] just turn down.

[D] turn down, then move aft.

111 A slotted flap will increase the CLmax by: (1.00 P.)

[A] increasing only the camber of the aerofoil.

[B] increasing the camber of the aerofoil and re-energising the airflow.

[C] decreasing the skin friction.

[D] increasing the critical angle of attack.

112 In order to maintain straight and level flight at a constant airspeed, whilst the flaps are being retracted, the angle of attack must be: (1.00 P.)

[A] held constant

[B] increased

[C] increased or decreased depending upon the type of flap

[D] decreased

113 The function of the slot between an extended slat and the leading edge of the wing is to: (1.00 P.)

[A] reduce the wing loading.

[B] cause a venturi effect which energizes the boundary layer.

[C] allow space for vibration of the slat.

[D] slow the air flow in the slot so that more pressure is created under the wing.

114 An aeroplane has the following flap settings: 0°, 15°, 30° and 45°. Slats can also be selected. Which of the following selections will most adversely affect the CL/CD ratio? (1.00 P.)

[A] Flaps from 0° to 15°.

[B] Flaps from 15° to 30°.

[C] The slats.

[D] Flaps from 30° to 45°.

115 After take-off the slats (when installed) are always retracted later than the flaps. Why ? (1.00 P.)

[A] Because VMCA with SLATS EXTENDED is more favourable compared to the FLAPS EXTENDED situation.

[B] Because SLATS EXTENDED provides a better view from the cockpit than FLAPS EXTENDED.

[C] Because SLATS EXTENDED gives a large decrease in stall speed with relatively less drag.

[D] Because FLAPS EXTENDED gives a large decrease in stall speed with relatively less drag.

116 Upon extension of a spoiler on a wing: (1.00 P.)

[A] CD is increased, while CL remains unaffected.

[B] both CL and CD are increased.

[C] only CL is decreased (CD remains unaffected).

[D] CD is increased and CL is decreased.

117 When "spoilers" are used as speed brakes: (1.00 P.)

[A] at same angle of attack, CD is increased and CL is decreased.

[B] CLmax of the polar curve is not affected.

[C] at same angle of attack, CL remains unaffected.

[D] they do not affect wheel braking action during landing.

118 During initiation of a turn with speedbrakes extended, the roll spoiler function induces a spoiler deflection: (1.00 P.)

[A] downward on the upgoing wing and upward on the downgoing wing.

[B] on the upgoing wing only.

[C] upward on the upgoing wing and downward on the downgoing wing.

[D] on the downgoing wing only.

119 Stick forces, provided by an elevator feel system, depend on: (1.00 P.)

[A] elevator deflection, static pressure.

[B] elevator deflection, dynamic pressure.

[C] stabilizer position, static pressure.

[D] stabilizer position, total pressure.

120 For a fixed-pitch propeller designed for cruise, the angle of attack of each blade, measured at the reference section: (1.00 P.)

[A] is optimum when the aircraft is in a stabilized cruising flight.

[B] is lower in ground run than in flight (with identical engine RPM).

[C] decreases when the aircraft speed decreases (with identical engine RPM).

[D] is always positive during idling descent.

121 Why is a propeller blade twisted from root to tip? (1.00 P.)

[A] To ensure that the tip produces most thrust.

[B] To ensure the angle of attack is greatest at the tip.

[C] To ensure that the root produces most thrust.

[D] To maintain a constant angle of attack along the whole length of the propeller blade.

122 Constant-speed propellers provide a better performance than fixed-pitch propellers because they: (1.00 P.)

[A] produce an almost maximum efficiency over a wider speed range.

[B] have more blade surface area than a fixed-pitch propeller.

[C] produce a greater maximum thrust than a fixed-pitch propeller.

[D] have a higher maximum efficiency than a fixed-pitch propeller.

123 If you pull back the RPM lever of a constant speed propeller during a glide with idle power and constant speed, the propeller pitch will: (1.00 P.)

[A] decrease and the rate of descent will increase.

[B] decrease and the rate of descent will decrease.

[C] increase and the rate of descent will increase.

[D] increase and the rate of descent will decrease.

124 If you push forward the RPM lever of a constant speed propeller during a glide with idle power and constant speed, the propeller pitch will: (1.00 P.)

[A] decrease and the rate of descent will decrease.

[B] increase and the rate of descent will increase.

[C] decrease and the rate of descent will increase.

[D] increase and the rate of descent will decrease.

125 Propeller efficiency may be defined as the ratio between: (1.00 P.)

[A] usable (power available) power of the propeller and shaft power.

[B] the usable (power available) power and the maximum power.

[C] the thrust and the maximum thrust.

[D] the thermal power of fuel-flow and shaft power.

126 An engine failure can result in a windmilling (1) propeller and a feathered (2) propeller. Which statement about propeller drag is correct? (1.00 P.)

[A] (1) is larger than (2).

[B] (1) is equal to (2).

[C] impossible to say which one is largest.

[D] (2) is larger than (1).

127 When the blades of a propeller are in the feathered position: (1.00 P.)

[A] the windmilling RPM is the maximum.

[B] the RPM is then just sufficient to lubricate the engine.

[C] the drag of the propeller is then minimal.

[D] the propeller produces an optimal windmilling RPM.

128 Increasing the number of propeller blades will: (1.00 P.)

[A] increase the maximum absorption of power.

[B] decrease the torque in the propeller shaft at maximum power.

[C] increase the propeller efficiency.

[D] increase the noise level at maximum power.

129 The torque effect during the take off run in respect of a right hand propeller, when viewed from behind, will tend to: (1.00 P.)

[A] roll the aeroplane to the right.

[B] pitch the aeroplane nose down.

[C] pitch the aeroplane nose up.

[D] roll the aeroplane to the left.

130 Gyroscopic precession of a propeller is induced by: (1.00 P.)

[A] pitching and yawing.

[B] increasing RPM and rolling.

[C] pitching and rolling.

[D] increasing RPM and yawing.

131 Asymmetric propeller blade effect is mainly induced by: (1.00 P.)

[A] high speed.

[B] the inclination of the propeller axis to the relative airflow.

[C] large angles of yaw.

[D] large angles of climb.

132 A propeller is turning to the right when viewed from behind. The asymmetric blade effect in the climb at low speed will: (1.00 P.)

[A] roll the aeroplane to the right.

[B] yaw the aeroplane to the right.

[C] yaw the aeroplane to the left.

[D] roll the aeroplane to the left.

133 A jet aeroplane cruises buffet free at high constant altitude. Which type of stall can occur if this aeroplane decelerates during an inadvertent increase in load factor ? (1.00 P.)

[A] Shock stall.

[B] Deep stall.

[C] Low speed stall.

[D] Accelerated stall.

134 Which type of stall has the largest associated angle of attack? (1.00 P.)

[A] Accelerated stall.

[B] Low speed stall.

[C] Deep stall.

[D] Shock stall.

135 Which combination of speeds is applicable for structural strength in gust (clean configuration) ? (1.00 P.)

[A] 55 ft/sec and VB.

[B] 50 ft/sec and VC.

[C] 66 ft/sec and VD.

[D] 65 ft/sec at all speeds.

136 The extreme right limitation for both V-n (gust and manoeuvre) diagrams is created by the speed: (1.00 P.)

[A] VD

[B] VMO

[C] Vflutter

[D] VC

137 The most important problem of ice accretion on a transport aeroplane during flight is: (1.00 P.)

[A] increase in weight.

[B] reduction in CLmax.

[C] blocking of control surfaces.

[D] increase in drag.

138 The effects of very heavy rain (tropical rain) on the aerodynamic characteristics of an aeroplane are: (1.00 P.)

[A] decrease of CLmax and decrease of drag.

[B] increase of CLmax and decrease of drag.

[C] decrease of CLmax and increase of drag.

[D] increase of CLmax and increase of drag.

139 While flying under icing conditions, the largest ice build-up will occur, principally, on: (1.00 P.)

[A] The frontal areas of the aircraft.

[B] The pitot and static probes only.

[C] The upper and lower surfaces on the rear of the wing.

[D] The upper and lower rudder surfaces.

140 The frontal area of a body, placed in a certain airstream is increased by a factor 3. The shape will not alter. The aerodynamic drag will increase with a factor: (1.00 P.)

[A] 9 .

[B] 6 .

[C] 1.5 .

[D] 3 .

141 How does stalling speed (IAS) vary with altitude? (1.00 P.)

[A] It increases with increasing altitude, because the density decreases.

[B] It remains constant at lower altitudes but decreases at higher altitudes due to compressibility effects.

[C] It remains constant.

[D] It remains constant at lower altitudes but increases at higher altitudes due to compressibility effects.

142 The aerodynamic drag of a body, placed in a certain airstream depends amongst others on: (1.00 P.)

[A] The weight of the body.

[B] The c.g. location of the body.

[C] The airstream velocity.

[D] The specific mass of the body.

143 A body is placed in a certain airstream. The airstream velocity increases by a factor 4. The aerodynamic drag will increase with a factor: (1.00 P.)

[A] 8 .

[B] 4 .

[C] 16 .

[D] 12 .

144 What data may be obtained from the Buffet Onset Boundary chart? (1.00 P.)

[A] The values of MMO at different weights and altitudes.

[B] The values of Mcrit at different weights and altitudes.

[C] The values of the Mach Number at which low speed and shock-stall occur at different weights and altitudes.

[D] The values of the Mach Number at which low speed and Mach Buffet occur at different weights and altitudes.

145 A body is placed in a certain airstream. The density of the airstream decreases to half of the original value. The aerodynamic drag will decrease with a factor: (1.00 P.)

[A] 4 .

[B] 2 .

[C] 8 .

[D] 1.4 .

146 Mcrit is the free stream Mach Number at which: (1.00 P.)

[A] somewhere about the airframe Mach 1 is reached locally.

[B] shockstall occurs.

[C] the critical angle of attack is reached.

[D] Mach buffet occurs.

147 Which of the following (1) aerofoils and (2) angles of attack will produce the lowest Mcrit values? (1.00 P.)

[A] (1) thick and (2) large.

[B] (1) thick and (2) small.

[C] (1) thin and (2) large.

[D] (1) thin and (2) small.

148 The point, where the aerodynamic lift acts on a wing is: (1.00 P.)

[A] the suction point of the wing.

[B] the centre of pressure.

[C] the centre of gravity location.

[D] the point of maximum thickness of the wing.

149 Which kind of flow separation occurs at the smallest angle of attack? (1.00 P.)

[A] Accelerated stall.

[B] shockstall.

[C] deep stall.

[D] low-speed stall.

150 The location of the centre of pressure of a positive cambered wing at increasing angle of attack will: (1.00 P.)

[A] shift aft.

[B] shift in spanwise direction.

[C] shift forward.

[D] not shift.

151 When the Mach number is slowly increased in straight and level flight the first shockwaves will occur: (1.00 P.)

[A] somewhere on the horizontal tail.

[B] on the upper surface at the wing root.

[C] somewhere on the fin.

[D] on the lower surface of the wing.

152 The unit of density is: (1.00 P.)

[A] kg/cm^2

[B] psi

[C] Bar

[D] kg/m^3

153 The unit of measurement of pressure is: (1.00 P.)

[A] kg/m^3

[B] lb/gal

[C] kg/dm^2

[D] psi

154 The consequences of exceeding Mcrit in a swept-wing aeroplane may be: (assume no corrective devices, straight and level flight) (1.00 P.)

[A] an increase in speed and a tendency to pitch up.

[B] engine unbalance and buffeting.

[C] buffeting of the aeroplane and a tendency to pitch down.

[D] buffeting of the aeroplane and a tendency to pitch up.

155 The boundary layer of a wing is: (1.00 P.)

[A] a turbulent flow around the wing.

[B] a layer on the wing in which the stream velocity is lower than the free stream velocity.

[C] caused by suction on the upper wing surface.

[D] created by the normal shock wave at transonic speeds.

156 A laminar boundary layer is a layer, in which: (1.00 P.)

[A] no velocity components exist, normal to the surface.

[B] the temperature varies constantly.

[C] the velocity is constant.

[D] the vortices are weak.

157 The maximum acceptable cruising altitude is limited by a minimum acceptable loadfactor because exceeding that altitude: (1.00 P.)

[A] turbulence may exceed the limit load factor.

[B] Mach buffet will occur immediately.

[C] turbulence may induce Mach buffet.

[D] a sudden necessary bankangle may exceed the limit load factor.

158 Total pressure is: (1.00 P.)

[A] ½ rho V^2

[B] static pressure plus dynamic pressure.

[C] measured at a small hole in a surface, parallel to the local stream.

[D] static pressure minus dynamic pressure.

159 If an aeroplane is accelerated from subsonic to supersonic speeds, the centre of pressure will move: (1.00 P.)

[A] forward.

[B] to a position near the leading edge.

[C] to the mid chord position.

[D] to a position near the trailing edge.

160 The (subsonic) static pressure: (1.00 P.)

[A] is the pressure in a point at which the velocity has become zero.

[B] is the total pressure plus the dynamic pressure.

[C] decreases in a flow in a tube when the diameter decreases.

[D] increases in a flow in a tube when the diameter decreases.

161 Vortex generators on the upper side of the wing surface will: (1.00 P.)

[A] increase the magnitude of the shock wave.

[B] decrease the intensity of shock wave induced air separation.

[C] increase the critical Mach Number.

[D] decrease the span wise flow at high Mach Numbers.

162 The true airspeed (TAS) is: (1.00 P.)

[A] lower than the speed of the undisturbed airstream about the aeroplane.

[B] equal to the IAS, multiplied by the air density at sea level.

[C] higher than the speed of the undisturbed airstream about the aeroplane.

[D] lower than the indicated airspeed (IAS) at ISA conditions and altitudes below sea level.

163 Vortex generators on the upper side of the wing: (1.00 P.)

[A] increase critical Mach Number.

[B] decrease wave drag.

[C] decrease critical Mach Number.

[D] increase wave drag.

164 The lift- and drag forces, acting on a wing cross section: (1.00 P.)

[A] vary linearly with the angle of attack.

[B] depend on the pressure distribution about the wing cross section.

[C] are proportional to each other, independent of angle of attack.

[D] are normal to each other at just one angle of attack.

165 The lift force, acting on an aerofoil: (1.00 P.)

[A] increases, proportional to the angle of attack until 40 degrees.

[B] is maximum at an angle of attack of 2 degrees.

[C] is mainly caused by suction on the upperside of the aerofoil.

[D] is mainly caused by overpressure at the underside of the aerofoil.

166 The aft movement of the centre of pressure during acceleration through the transonic range will: (1.00 P.)

[A] increase the static longitudinal stability.

[B] decrease the longitudinal stability.

[C] decrease the static lateral stability.

[D] increase the static lateral stability.

167 In supersonic flight aerofoil pressure distribution is: (1.00 P.)

[A] rectangular.

[B] irregular.

[C] triangular.

[D] the same as in subsonic flight.

168 The relative thickness of an aerofoil is expressed in: (1.00 P.)

[A] camber.

[B] meters.

[C] degrees cross section tail angle.

[D] % chord.

169 The aerofoil polar is: (1.00 P.)

[A] the relation between the horizontal and the vertical speed.

[B] a graph of the relation between the lift coefficient and the drag coefficient.

[C] a graph, in which the thickness of the wing aerofoil is given as a function of the chord.

[D] a graph of the relation between the lift coefficient and the angle of attack.

170 Shock stall is: (1.00 P.)

[A] separation of the flow behind the bow wave.

[B] separation of the boundary layer behind the shock wave.

[C] separation of the flow at high angles of attack and at high Mach Numbers.

[D] separation of the flow at the trailing edge of the wing at high Mach Numbers.

171 The aspect ratio of the wing: (1.00 P.)

[A] is the ratio between chord and root chord.

[B] is the ratio between the wing span and the mean geometric chord.

[C] is the ratio between the tip chord and the wing span.

[D] is the ratio between the wing span and the root chord.

172 In the transonic range the aeroplane characteristics are strongly determined by: (1.00 P.)

[A] the IAS.

[B] the CAS.

[C] the Mach Number.

[D] the TAS.

173 Dihedral of the wing is: (1.00 P.)

[A] the angle between the 0.25 chord line of the wing and the lateral axis.

[B] the angle between the 0.25 chord line of the wing and the horizon.

[C] the angle between the leading edge of the wing and the lateral axis.

[D] the angle between the 0.25 chord line of the wing and the vertical axis.

174 Which of the following flight phenomena can only occur at Mach numbers above the critical Mach number? (1.00 P.)

[A] Speed instability.

[B] Mach buffet.

[C] Elevator stall.

[D] Dutch roll.

175 The induced drag: (1.00 P.)

[A] increases as the lift coefficient increases.

[B] increases as the magnitude of the tip vortices decreases.

[C] increases as the aspect ratio increases.

[D] has no relation to the lift coefficient.

176 Which of the following flight phenomena can occur at Mach numbers below the critical Mach number? (1.00 P.)

[A] Shock stall.

[B] Dutch roll.

[C] Mach buffet.

[D] Tuck under.

177 Flap selection at constant IAS whilst maintaining straight and level flight will increase the: (1.00 P.)

[A] stall speed.

[B] lift and the drag.

[C] lift coefficient and the drag.

[D] maximum lift coefficient (CLmax) and the drag.

178 The Mach trim system will: (1.00 P.)

[A] pump the fuel from tank to tank, depending on the Mach Number.

[B] keep the Mach Number automatically constant.

[C] adjust the elevator trim tab, depending on the Mach Number.

[D] adjust the stabilizer, depending on the Mach Number.

179 If the sum of all the moments in flight is not zero, the aeroplane will rotate about the: (1.00 P.)

[A] neutral point of the aeroplane.

[B] aerodynamic centre of the wing.

[C] centre of pressure of the wing.

[D] centre of gravity.

180 The Mach trim system will prevent: (1.00 P.)

[A] tuck under.

[B] dutch roll.

[C] shock stall.

[D] buffeting.

181 Dihedral of the wing: (1.00 P.)

[A] is only positive for aeroplanes with high mounted wings.

[B] is the only way to increase the static lateral stability.

[C] increases the static lateral stability.

[D] decreases the static lateral stability.

182 When air has passed an expansion wave, the static pressure is: (1.00 P.)

[A] increased.

[B] decreased.

[C] unchanged.

[D] decreased or increased, depending on Mach Number.

183 The critical Mach Number of an aeroplane is the free stream Mach Number, which produces the first evidence of: (1.00 P.)

[A] local sonic flow.

[B] shock wave.

[C] supersonic flow.

[D] buffet.

184 A C.G location beyond the aft limit leads to: (1.00 P.)

[A] a too high pulling stick force during rotation in the take off.

[B] an unacceptable low value of the manoeuvre stability (stick force per g, Fe/g).

[C] a better recovery performance in the spin.

[D] an increasing static longitudinal stability.

185 If the elevator trim tab is deflected up, the cockpit trim indicator presents: (1.00 P.)

[A] nose-down.

[B] nose-up.

[C] neutral.

[D] nose-left.

186 The critical Mach Number of an aeroplane can be increased by: (1.00 P.)

[A] sweep back of the wings.

[B] vortex generators.

[C] control deflection

[D] dihedral of the wings.

187 Differential aileron deflection: (1.00 P.)

[A] increases the CLmax.

[B] is required to achieve the required roll-rate.

[C] equals the drag of the right and left aileron.

[D] is required to keep the total lift constant when ailerons are deflected.

188 In supersonic flight, all disturbances produced by an aeroplane are: (1.00 P.)

[A] outside the conical area depending on the Mach Number.

[B] in between a conical area, depending on the Mach Number.

[C] very weak and negligible.

[D] in front of the aeroplane.

189 In transonic flight the ailerons will be less effective than in subsonic flight because: (1.00 P.)

[A] aileron deflection only partly affects the pressure distribution around the wing.

[B] behind the shock wave pressure is lower.

[C] aileron deflection only affects the air in front of the shock wave.

[D] aileron down deflection moves the shock wave forward.

190 An example of differential aileron deflection during initiation of left turn is: (1.00 P.)

[A] Left aileron: 2° up
Right aileron: 5° down

[B] Left aileron: 5° down
Right aileron: 2° up

[C] Left aileron: 5° up
Right aileron: 2° down

[D] Left aileron: 2° down
Right aileron: 5° up

191 To be able to predict compressibility effects you have to determine the: (1.00 P.)

[A] IAS.

[B] TAS.

[C] EAS.

[D] Mach Number.

192 Does the pitch-angle of a constant-speed propeller alter in medium horizontal turbulence? (1.00 P.)

[A] Yes strongly.

[B] No.

[C] Yes slightly.

[D] Yes, but only if the pitch is full-fine.

193 When trailing edge flaps are selected down whilst maintaining straight and level flight at constant IAS: (1.00 P.)

[A] the stall speed increases.

[B] the centre of pressure moves aft.

[C] the total boundary layer becomes laminar.

[D] the lift coefficient and the drag coefficient increase.

194 The formula for the Mach Number is:
(a= speed of sound) (1.00 P.)

[A] M= a / TAS

[B] M= TAS / a

[C] M= TAS*a

[D] M= IAS / a

195 Assuming ISA conditions, climbing at a constant Mach Number up to FL 350 the TAS will: (1.00 P.)

[A] increase.

[B] decrease.

[C] remain constant.

[D] first increase, then decrease.

196 Which of the following situations leads to a decreasing stall speed (IAS)? (1.00 P.)

[A] decreasing weight.

[B] increasing altitude.

[C] increasing air density.

[D] increasing load factor.

197 The speed of sound is affected by the: (1.00 P.)

[A] density of the air.

[B] temperature of the air.

[C] pressure of the air.

[D] humidity of the air.

198 Two identical aircraft A and B, with the same mass, are flying steady level co-ordinated 20 degree bank turns. If the TAS of A is 130 kt and that of B is 200 kt: (1.00 P.)

[A] the lift coefficient of A is less than that of B.

[B] the load factor of A is greater than that of B.

[C] the rate of turn of A is greater than that of B.

[D] the turn radius of A is greater than that of B.

199 Which of the following statements about a constant speed propeller is correct? (1.00 P.)

[A] The propeller system keeps the aeroplane speed constant.

[B] The blade angle increases with increasing aeroplane speed.

[C] The selected RPM is kept constant by the manifold pressure.

[D] The RPM decreases with increasing aeroplane speed.

200 An aeroplane is flying through the transonic range. As the Mach Number increases the centre of pressure of the wing will move aft. This movement requires: (1.00 P.)

[A] a stability augmentation system to improve dynamic stability.

[B] much more thrust from the engine.

[C] a higher IAS to compensate the nose down effect.

[D] a pitch up input of the stabilizer.

Anlagen zu den Aufgaben

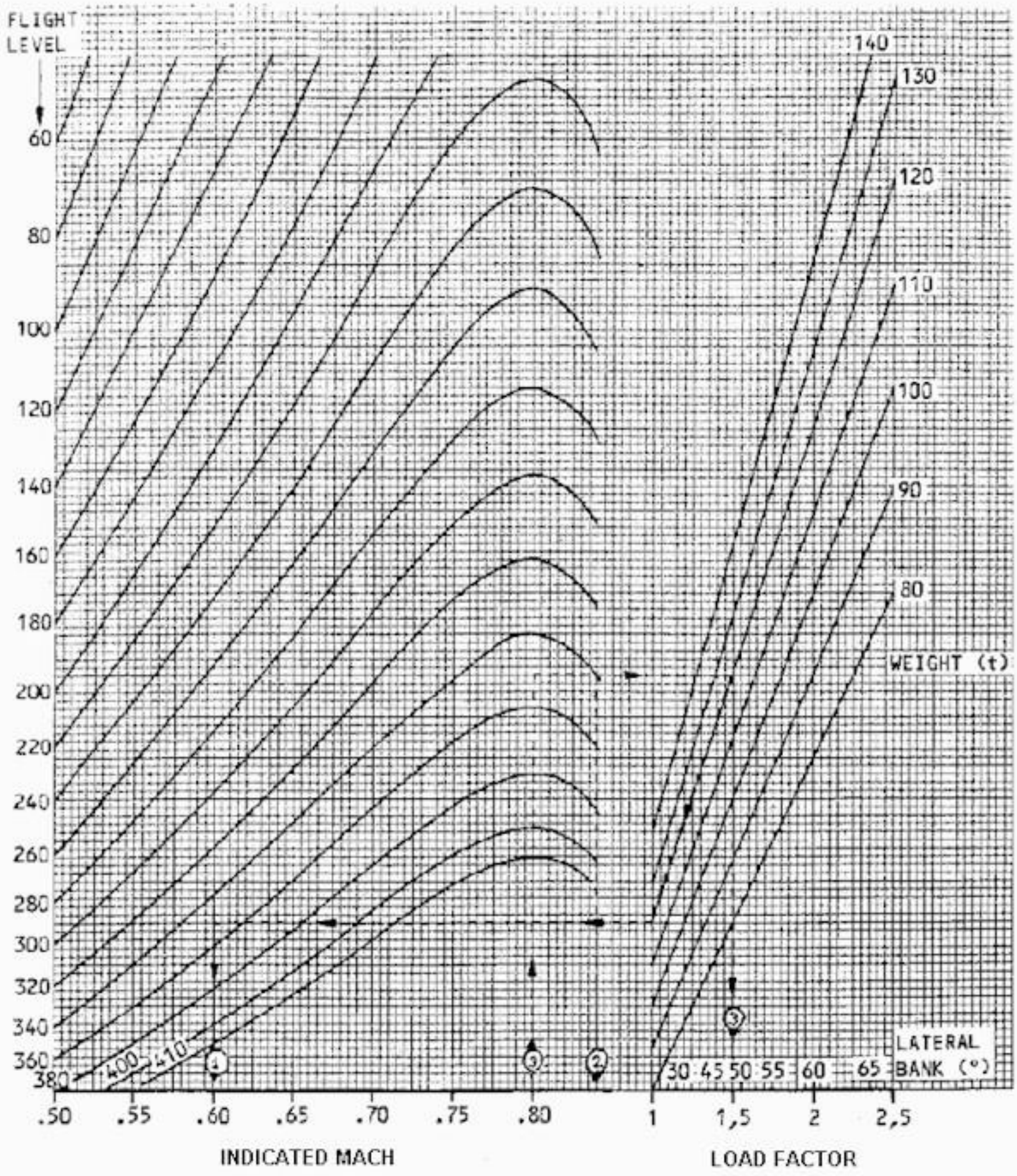
Anlage 1 zu Aufgabe 92

Titel: Anlage 1

Anlagen zu den Aufgaben

Buffet Onset Boundary Chart

CLEAN CONFIGURATION



Data		EXAMPLE RESULTS
Weight	120 t	① Low speed buffeting at M = 0 60
Load factor	1 g	
Level	350	② High speed buffeting at M > 0 84
Mach nr	0,8	③ At Mach 0 80 Buffeting takes place at 48 ° bank or 15 g
Level	350	
Weight	120 t	

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Prüfungsdatum:	**Unterschrift**

1.	A	B	C	D	**2.**	A	B	C	D	**3.**	A	B	C	D
4.	**A**	**B**	**C**	**D**	**5.**	**A**	**B**	**C**	**D**	**6.**	**A**	**B**	**C**	**D**
7.	**A**	**B**	**C**	**D**	**8.**	**A**	**B**	**C**	**D**	**9.**	**A**	**B**	**C**	**D**
10.	**A**	**B**	**C**	**D**	**11.**	**A**	**B**	**C**	**D**	**12.**	**A**	**B**	**C**	**D**
13.	**A**	**B**	**C**	**D**	**14.**	**A**	**B**	**C**	**D**	**15.**	**A**	**B**	**C**	**D**
16.	**A**	**B**	**C**	**D**	**17.**	**A**	**B**	**C**	**D**	**18.**	**A**	**B**	**C**	**D**
19.	**A**	**B**	**C**	**D**	**20.**	**A**	**B**	**C**	**D**	**21.**	**A**	**B**	**C**	**D**
22.	**A**	**B**	**C**	**D**	**23.**	**A**	**B**	**C**	**D**	**24.**	**A**	**B**	**C**	**D**
25.	**A**	**B**	**C**	**D**	**26.**	**A**	**B**	**C**	**D**	**27.**	**A**	**B**	**C**	**D**
28.	**A**	**B**	**C**	**D**	**29.**	**A**	**B**	**C**	**D**	**30.**	**A**	**B**	**C**	**D**
31.	**A**	**B**	**C**	**D**	**32.**	**A**	**B**	**C**	**D**	**33.**	**A**	**B**	**C**	**D**
34.	**A**	**B**	**C**	**D**	**35.**	**A**	**B**	**C**	**D**	**36.**	**A**	**B**	**C**	**D**
37.	**A**	**B**	**C**	**D**	**38.**	**A**	**B**	**C**	**D**	**39.**	**A**	**B**	**C**	**D**
40.	**A**	**B**	**C**	**D**	**41.**	**A**	**B**	**C**	**D**	**42.**	**A**	**B**	**C**	**D**
43.	**A**	**B**	**C**	**D**	**44.**	**A**	**B**	**C**	**D**	**45.**	**A**	**B**	**C**	**D**
46.	**A**	**B**	**C**	**D**	**47.**	**A**	**B**	**C**	**D**	**48.**	**A**	**B**	**C**	**D**
49.	**A**	**B**	**C**	**D**	**50.**	**A**	**B**	**C**	**D**	**51.**	**A**	**B**	**C**	**D**
52.	**A**	**B**	**C**	**D**	**53.**	**A**	**B**	**C**	**D**	**54.**	**A**	**B**	**C**	**D**
55.	**A**	**B**	**C**	**D**	**56.**	**A**	**B**	**C**	**D**	**57.**	**A**	**B**	**C**	**D**
58.	**A**	**B**	**C**	**D**	**59.**	**A**	**B**	**C**	**D**	**60.**	**A**	**B**	**C**	**D**
61.	**A**	**B**	**C**	**D**	**62.**	**A**	**B**	**C**	**D**	**63.**	**A**	**B**	**C**	**D**
64.	**A**	**B**	**C**	**D**	**65.**	**A**	**B**	**C**	**D**	**66.**	**A**	**B**	**C**	**D**

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Name:	**Prüf.-Nr.:**
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67.	A	B	C	D	68.	A	B	C	D	69.	A	B	C	D
70.	A	B	C	D	71.	A	B	C	D	72.	A	B	C	D
73.	A	B	C	D	74.	A	B	C	D	75.	A	B	C	D
76.	A	B	C	D	77.	A	B	C	D	78.	A	B	C	D
79.	A	B	C	D	80.	A	B	C	D	81.	A	B	C	D
82.	A	B	C	D	83.	A	B	C	D	84.	A	B	C	D
85.	A	B	C	D	86.	A	B	C	D	87.	A	B	C	D
88.	A	B	C	D	89.	A	B	C	D	90.	A	B	C	D
91.	A	B	C	D	92.	A	B	C	D	93.	A	B	C	D
94.	A	B	C	D	95.	A	B	C	D	96.	A	B	C	D
97.	A	B	C	D	98.	A	B	C	D	99.	A	B	C	D
100.	A	B	C	D	101.	A	B	C	D	102.	A	B	C	D
103.	A	B	C	D	104.	A	B	C	D	105.	A	B	C	D
106.	A	B	C	D	107.	A	B	C	D	108.	A	B	C	D
109.	A	B	C	D	110.	A	B	C	D	111.	A	B	C	D
112.	A	B	C	D	113.	A	B	C	D	114.	A	B	C	D
115.	A	B	C	D	116.	A	B	C	D	117.	A	B	C	D
118.	A	B	C	D	119.	A	B	C	D	120.	A	B	C	D
121.	A	B	C	D	122.	A	B	C	D	123.	A	B	C	D
124.	A	B	C	D	125.	A	B	C	D	126.	A	B	C	D
127.	A	B	C	D	128.	A	B	C	D	129.	A	B	C	D
130.	A	B	C	D	131.	A	B	C	D	132.	A	B	C	D

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Name:	**Prüf.-Nr.:**
Prüfungsdatum:	**Unterschrift**

133.	A	B	C	D	134.	A	B	C	D	135.	A	B	C	D
136.	A	B	C	D	137.	A	B	C	D	138.	A	B	C	D
139.	A	B	C	D	140.	A	B	C	D	141.	A	B	C	D
142.	A	B	C	D	143.	A	B	C	D	144.	A	B	C	D
145.	A	B	C	D	146.	A	B	C	D	147.	A	B	C	D
148.	A	B	C	D	149.	A	B	C	D	150.	A	B	C	D
151.	A	B	C	D	152.	A	B	C	D	153.	A	B	C	D
154.	A	B	C	D	155.	A	B	C	D	156.	A	B	C	D
157.	A	B	C	D	158.	A	B	C	D	159.	A	B	C	D
160.	A	B	C	D	161.	A	B	C	D	162.	A	B	C	D
163.	A	B	C	D	164.	A	B	C	D	165.	A	B	C	D
166.	A	B	C	D	167.	A	B	C	D	168.	A	B	C	D
169.	A	B	C	D	170.	A	B	C	D	171.	A	B	C	D
172.	A	B	C	D	173.	A	B	C	D	174.	A	B	C	D
175.	A	B	C	D	176.	A	B	C	D	177.	A	B	C	D
178.	A	B	C	D	179.	A	B	C	D	180.	A	B	C	D
181.	A	B	C	D	182.	A	B	C	D	183.	A	B	C	D
184.	A	B	C	D	185.	A	B	C	D	186.	A	B	C	D
187.	A	B	C	D	188.	A	B	C	D	189.	A	B	C	D
190.	A	B	C	D	191.	A	B	C	D	192.	A	B	C	D
193.	A	B	C	D	194.	A	B	C	D	195.	A	B	C	D
196.	A	B	C	D	197.	A	B	C	D	198.	A	B	C	D

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Prüfungsdatum:	**Unterschrift**

199.	A	B	C	D		200.	A	B	C	D

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1.	A				**2.**				D	**3.**	A			
4.			**C**		**5.**	**A**				**6.**				**D**
7.				**D**	**8.**		**B**			**9.**	**A**			
10.			**C**		**11.**				**D**	**12.**			**C**	
13.				**D**	**14.**			**C**		**15.**	**A**			
16.	**A**				**17.**			**C**		**18.**	**A**			
19.			**C**		**20.**				**D**	**21.**				**D**
22.	**A**				**23.**				**D**	**24.**			**C**	
25.	**A**				**26.**		**B**			**27.**				**D**
28.				**D**	**29.**		**B**			**30.**			**C**	
31.				**D**	**32.**		**B**			**33.**			**C**	
34.				**D**	**35.**	**A**				**36.**		**B**		
37.		**B**			**38.**				**D**	**39.**				**D**
40.	**A**				**41.**	**A**				**42.**		**B**		
43.	**A**				**44.**	**A**				**45.**			**C**	
46.			**C**		**47.**				**D**	**48.**	**A**			
49.	**A**				**50.**	**A**				**51.**			**C**	
52.			**C**		**53.**				**D**	**54.**				**D**
55.			**C**		**56.**		**B**			**57.**	**A**			
58.	**A**				**59.**				**D**	**60.**	**A**			
61.			**C**		**62.**		**B**			**63.**		**B**		
64.	**A**				**65.**			**C**		**66.**				**D**

Nur für den internen Gebrauch	
LÖSUNGSBOGEN	**Prüf.-Nr.:**
Prüfungsdatum:	

67.				**D**	**68.**	**A**				**69.**		**B**		
70.				**D**	**71.**	**A**				**72.**			**C**	
73.				**D**	**74.**				**D**	**75.**				**D**
76.		**B**			**77.**				**D**	**78.**			**C**	
79.	**A**				**80.**		**B**			**81.**	**A**			
82.			**C**		**83.**		**B**			**84.**			**C**	
85.			**C**		**86.**				**D**	**87.**	**A**			
88.				**D**	**89.**		**B**			**90.**	**A**			
91.			**C**		**92.**		**B**			**93.**			**C**	
94.		**B**			**95.**				**D**	**96.**			**C**	
97.				**D**	**98.**			**C**		**99.**		**B**		
100.		**B**			**101.**			**C**		**102.**				**D**
103.				**D**	**104.**			**C**		**105.**			**C**	
106.		**B**			**107.**			**C**		**108.**			**C**	
109.				**D**	**110.**		**B**			**111.**		**B**		
112.		**B**			**113.**		**B**			**114.**				**D**
115.			**C**		**116.**				**D**	**117.**	**A**			
118.	**A**				**119.**		**B**			**120.**	**A**			
121.				**D**	**122.**	**A**				**123.**				**D**
124.			**C**		**125.**	**A**				**126.**	**A**			
127.			**C**		**128.**	**A**				**129.**				**D**
130.	**A**				**131.**		**B**			**132.**			**C**	

Nur für den internen Gebrauch	
LÖSUNGSBOGEN	**Prüf.-Nr.:**
Prüfungsdatum:	

133.				D	134.			C		135.		B		
136.	A				137.		B			138.			C	
139.	A				140.				D	141.				D
142.			C		143.			C		144.				D
145.		B			146.	A				147.	A			
148.		B			149.		B			150.			C	
151.		B			152.				D	153.				D
154.			C		155.		B			156.	A			
157.			C		158.		B			159.			C	
160.			C		161.		B			162.				D
163.		B			164.		B			165.			C	
166.	A				167.	A				168.				D
169.		B			170.		B			171.		B		
172.			C		173.	A				174.		B		
175.	A				176.		B			177.				D
178.				D	179.				D	180.	A			
181.			C		182.		B			183.	A			
184.		B			185.	A				186.	A			
187.			C		188.		B			189.	A			
190.			C		191.				D	192.			C	
193.		B			194.		B			195.		B		
196.	A				197.		B			198.			C	

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Prüfungsdatum:	

199.		**B**				**200.**				**D**