32. PERFORMANCE - AEROPLANES

32.01. PERFORMANCE OF SINGLE-ENGINE A/C

32.01.01. Definitions of terms and speeds used

1
id 393

Given that: VEF= Critical engine failure speed VMCG= Ground minimum control speed VMCA= Air minimum control speed VMU= Minimum unstick speed V1= Take-off decision speed VR= Rotation speed V2 min.= Minimum take-off safety speed The correct formula is:

a 1.05 VMCA<= VEF<= V1

b **VMCG<=VEF < V1**

c 1.05 VMCG< VEF<= VR

d V2min<= VEF<= VMU

2
id 1042

Given: VS= Stalling speed VMCA= Air minimum control speed VMU= Minimum unstick speed (disregarding engine failure) V1= take-off decision speed VR= Rotation speed V2 min.= Minimum take-off safety speed VLOF: Lift-off speed The correct formula is:

a V2min< VMCA> VMU

b VR< VMCA< VLOF

c VMU<= VMCA< V1

d **VS< VMCA< V2 min**

3
id 1043

Regarding take-off, the take-off decision speed V1:

a is always equal to VEF (Engine Failure speed).

b **is the airspeed on the ground at which the pilot is assumed to have made a decision to continue or discontinue the take-off.**

c is an airspeed at which the aeroplane is airborne but below 35 ft and the pilot is assumed to have made a decision to continue or discontinue the take-off .

d is the airspeed of the aeroplane upon reaching 35 feet above the take-off surface.

4
id 1872

Which of the following statements is correct?

a **Induced drag decreases with increasing speed.**

b Induced drag increases with increasing speed.

c Induced drag is independant of the speed.

d Induced drag decreases with increasing angle of attack.

5
id 2025

Density altitude is the

a **pressure altitude corrected for 'non standard' temperature**

b altitude reference to the standard datum plane

c altitude read directly from the altimeter

d height above the surface

6
id 2026

The Density Altitude

a is used to establish minimum clearance of 2.000 feet over mountains.

b is equal to the pressure altitude.

c **is used to determine the aeroplane performance.**

d is used to calculate the FL above the Transition Altitude.

7 id 2574 — What is the most important aspect of the 'backside of the power curve'?

a The aeroplane will not stall.

b **The speed is unstable.**

c The altitude cannot be maintained.

d The elevator must be pulled to lower the nose.

8 id 2641 — Which force compensates the weight in unaccelerated straight and level flight ?

a the resultant from lift and drag

b the thrust

c the drag

d **the lift**

9 id 2642 — In which of the flight conditions listed below is the thrust required (Tr) equal to the drag (D)?

a In a descent with constant TAS

b In accelerated level flight

c In a climb with constant IAS

d **In level flight with constant IAS**

10 id 2643 — The load factor in a turn in level flight with constant TAS depends on

a the true airspeed and the bank angle.

b the radius of the turn and the bank angle.

c **the bank angle only.**

d the radius of the turn and the weight of the aeroplane.

11 id 2644 — The induced drag of an aeroplane

a is independent of the airspeed.

b decreases with increasing gross weight.

c **decreases with increasing airspeed.**

d increases with increasing airspeed.

12 id 2645 — The induced drag of an aeroplane at constant gross weight and altitude is highest at

a VA (design manoeuvring speed)

b VS1 (stalling speed in clean configuration)

c VMO (maximum operating limit speed)

d **VSO (stalling speed in landing configuration)**

13 id 2647 — The point where Drag coefficient/Lift coefficient is a minimum is

a the point where a tangent from the origin touches the drag curve.

b **the lowest point of the drag curve.**

c at stalling speed (VS).

d on the "back side" of the drag curve.

14 The point at which a tangent out of the origin touches the power required curve
id 2649

a is the point where Drag coefficient is a minimum.

b **is the point where the Lift to Drag ratio is a maximum.**

c is the point where the Lift to Drag ratio is a minimum.

d is the maximum drag speed.

15 On a reciprocating engined aeroplane, to maintain a given angle of attack, configuration and altitude at higher gross mass
id 2650

a the lift/drag ratio must be increased.

b the airspeed will be decreased and the drag increased.

c **the airspeed and the drag will be increased.**

d the airspeed will be increased but the drag does not change.

16 On a reciprocating engined aeroplane, to maintain a given angle of attack, configuration and altitude at higher gross mass
id 2651

a **an increase in airspeed and power is required.**

b a higher coefficient of drag is required.

c an increase in airspeed is required but power setting does not change.

d requires an increase in power and decrease in the airspeed.

17 On a reciprocating engined aeroplane, with increasing altitude at constant gross mass, angle of attack and configuration the drag
id 2652

a remains unchanged but the the CAS increases.

b **remains unchanged but the TAS increases.**

c increases at constant TAS.

d decreases and the CAS decreases too because of the lower air density.

18 On a reciprocating engined aeroplane, with increasing altitude at constant gross mass, angle of attack and configuration the power required
id 2653

a **increases and the TAS increases by the same percentage.**

b increases but TAS remains constant.

c decreases slightly because of the lower air density.

d remains unchanged but the TAS increases.

19 A lower airspeed at constant mass and altitude requires
id 2665

a more thrust and a lower coefficient of lift.

b less thrust and a lower coefficient of lift.

c **a higher coefficient of lift.**

d more thrust and a lower coefficient of drag.

20 The coefficient of lift can be increased either by flap extension or by
id 2667

a increasing the CAS.

b increasing the TAS.

c decreasing the 'nose-up' elevator trim setting.

d **increasing the angle of attack.**

21 The rate of climb
id 2683

a **is approximately climb gradient times true airspeed divided by 100.**

b is the downhill component of the true airspeed.

c is angle of climb times true airspeed.

d is the horizontal component of the true airspeed.

22 Any acceleration in climb, with a constant power setting,
id 2685

a decreases rate of climb and increses angle of climb.

b improves the climb gradient if the airspeed is below VX.

c improves the rate of climb if the airspeed is below VY.

d **decreases the rate of climb and the angle of climb.**

23 In unaccelerated climb
id 2819

a lift is greater than the gross weight.

b **thrust equals drag plus the downhill component of the gross weight in the flight path direction.**

c lift equals weight plus the vertical component of the drag.

d thrust equals drag plus the uphill component of the gross weight in the flight path direction.

24 Which of the equations below expresses approximately the unaccelerated percentage climb gradient for small climb angles?
id 2820

a **Climb Gradient = ((Thrust - Drag)/Weight) x 100**

b Climb Gradient = ((Thrust + Drag)/Lift) x 100

c Climb Gradient = ((Thrust - Mass)/Lift) x 100

d Cimb Gradient = (Lift/Weight) x 100

25 The speed VS is defined as
id 2827

a speed for best specific range.

b safety speed for take-off in case of a contaminated runway.

c design stress speed.

d **stalling speed or minimum steady flight speed at which the aeroplane is controllable.**

26 The stalling speed or the minimum steady flight speed at which the aeroplane is controllable in landing configuration is abbreviated as
id 2832

a **VSO.**

b VS1.

c VS.

d VMC.

32.01.02. Take-off and landing performance

32.01.02.01. Effect of aeroplane mass, wind, density,

27 How does the thrust of fixed propeller vary during take-off run ? The thrust
id 2033

a has no change during take-off and climb.

b increases slightly while the aeroplane speed builds up.

c varies with mass changes only.

d **decreases slightly while the aeroplane speed builds up.**

28 id 5491 Take-off performance data, for the ambient conditions, show the following limitations with flap 10° selected: - runway limit: 5 270 kg - obstacle limit: 4 630 kg Estimated take-off mass is 5 000kg. Considering a take-off with flaps at:

a 20°, both limitations are increased

b 5°, both limitations are increased

c 20°, the obstacle limit is increased but the runway limit decreases

d 5°, the obstacle limit is increased but the runway limit decreases

---

29 id 5498 An increase in atmospheric pressure has, among other things, the following consequences on landing performance:

a a reduced landing distance and degraded go around performance

b an increased landing distance and degraded go-around performance

c an increased landing distance and improved go-around performance

d a reduced landing distance and improved go-around performance

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30 id 5499 A decrease in atmospheric pressure has, among other things, the following consequences on take-off performance:

a a reduced take-off distance and improved initial climb performance

b an increased take-off distance and degraded initial climb performance

c an increased take-off distance and improved initial climb performance

d a reduced take-off distance and degraded initial climb performance

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31 id 5500 An increase in atmospheric pressure has, among other things, the following consequences on take-off performance:

a a reduced take-off distance and improved initial climb performance

b an increased take-off distance and degraded initial climb performance

c an increased take-off distance and improved initial climb performance

d a reduced take-off distance and degraded initial climb performance

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32 id 6174 Which of the following combinations will give the most limiting weight if identical slope and wind component values exist?

a an up-sloping runway with a tailwind component

b a down-sloping runway with a tailwind component

c an up sloping runway with a headwind component

d a down-sloping runway with a headwind component

---

33 id 6175 The effect of a tailwind on the glide angle and the rate of descent assuming same CAS will be:

a decreases and decreases

b remains the same and increases

c decreases and remains the same

d increases and increases

---

34 id 6176 Runway 30 is in use and the threshold elevation is 2139 feet, threshold elevation of runway 12 is 2289 feet. Take-off run available is 1720 metres and clearway is 280 metres. What is the slope of the runway in use?

a 1.49% uphill

b 2.65% uphill

c 2.53% per minute

d 1.86% downhill

35 id 6248 | Other factors being equal , an increase in take-off weight will

- **a** increase lift off speed and decrease stalling speed
- **b** **increase lift off and stalling speed**
- **c** increase lift off speed and stalling speed remains
- **d** weight has no effect on take-off speed or lift-off speed

32.01.02.02. Use of aeroplane flight manual data

36 id 970 | (For this question use Performance Manual SEP1 Figure 2.4) With regard to the graph for landing performance, what is the minimum headwind component required in order to land at Helgoland airport? Given: Runway length: 1300 ft Runway elevation: MSL Weather: assume ISA conditions Mass: 3200 lbs Obstacle height: 50 ft

- **a** **10 kt.**
- **b** No wind.
- **c** 5 kt.
- **d** 15 kt.

37 id 2688 | The 'climb gradient' is defined as the ratio of

- **a** the increase of altitude to distance over ground expressed as a percentage.
- **b** **the increase of altitude to horizontal air distance expressed as a percentage.**
- **c** true airspeed to rate of climb.
- **d** rate of climb to true airspeed.

38 id 3076 | (For this Question use Performance Manual SEP1 Fig. 2.2) With regard to the take off performance chart for the single engine aeroplane determine the take off distance over a 50 ft obstacle height. Given : O.A.T : 30°C Pressure Altitude: 1000 ft Aeroplane Mass: 2950 lbs Tailwind component: 5 kt Fl

- **a** 1600 ft
- **b** 1900 ft
- **c** **2375 ft**
- **d** 2000 ft

39 id 3444 | (For this Question use Performance Manual SEP1 Fig. 2.4) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft . Given : O.A.T : 27 °C Pressure Altitude: 3000 ft Aeroplane Mass: 2900 lbs Tailwind component: 5 kt Flaps: Landing position (down) Runway: Tarred and Dry

- **a** **approximately : 1850 feet**
- **b** approximately : 1120 feet
- **c** approximately : 1700 feet
- **d** approximately : 1370 feet

40 id 3445 (For this Question use Performance Manual SEP1 Fig. 2.4) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft . Given : O.A.T : ISA +15°C Pressure Altitude: 0 ft Aeroplane Mass: 2940 lbs Headwind component: 10 kt Flaps: Landing position (down) Runway: Tarred and Dry

a approximately : 1400 feet

b approximately : 950 feet

c approximately : 1300 feet

d approximately : 750 feet

41 id 3446 (For this Question use Performance Manual SEP1 Fig. 2.4) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft . Given : O.A.T : ISA Pressure Altitude: 1000 ft Aeroplane Mass: 3500 lbs Tailwind component: 5 kt Flaps: Landing position (dow

a approximately : 920 feet

b approximately :1150 feet

c approximately : 1500 feet

d approximately : 1700 feet

42 id 3447 (For this Question use Performance Manual SEP1 Fig. 2.4) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft . Given : O.A.T : 0°C Pressure Altitude: 1000 ft Aeroplane Mass: 3500 lbs Tailwind component: 5 kt Flaps:

a approximately : 940 feet

b approximately : 1150 feet

c approximately : 1480 feet

d approximately : 1650 feet

43 id 3448 (For this Question use Performance Manual SEP1 Fig. 2.4) With regard to the landing chart for the single engine aeroplane determine the landing distance from a height of 50 ft . Given : O.A.T : ISA +15°C Pressure Altitude: 0 ft Aeroplane Mass: 2940 lbs Headwind component: 10 kt Flaps: Landing p

a approximately :1794 feet

b approximately : 1300 feet

c approximately : 2000 feet

d approximately : 1450 feet

44 id 3449 (For this Question use Performance Manual SEP1 Fig. 2.1) With regard to the take off performance chart for the single engine aeroplane determine the take off distance to a height of 50 ft . Given : O.A.T : 30°C Pressure Altitude: 1000 ft Aeroplane Mass: 3450 lbs Tailwind component: 2.5 kt Fl

a approximately : 2200 feet

b approximately : 1440 feet

c approximately : 2800 feet

d approximately : 2470 feet

45 id 3450 (For this Question use Performance Manual SEP1 Fig. 2.2) With regard to the take off performance chart for the single engine aeroplane determine the maximum allowable take off mass . Given : O.A.T : ISA Pressure Altitude: 4000 ft Headwind component: 5 kt Flaps: up Run

a 3000 lbs

b **3240 lbs**

c 2900 lbs

d > 3650 lbs

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46 id 3451 (For this Question use Performance Manual SEP1 Fig. 2.2) With regard to the take off performance chart for the single engine aeroplane determine the take off distance to a height of 50 ft. Given : O.A.T : -7°C Pressure Altitude: 7000 ft Aeroplane Mass: 2950 lbs Headwind component: 5 kt Fl

a approximately : 1260 ft

b approximately : 1150 ft

c approximately : 2450 ft

d **approximately : 2050 ft**

---

47 id 3452 (For this Question use Performance Manual SEP1 Fig. 2.1) With regard to the take off performance chart for the single engine aeroplane determine the take off speed for (1) rotation and (2) at a height of 50 ft. Given : O.A.T : ISA+10°C Pressure Altitude: 5000 ft Aeroplane mass: 3400 lbs Headwind component: 5

a 65 and 75 KIAS

b 73 and 84 KIAS

c 68 and 78 KIAS

d **71 and 82 KIAS**

---

48 id 3453 (For this Question use Performance Manual SEP1 Fig. 2.2) With regard to the take off performance chart for the single engine aeroplane determine the take off distance to a height of 50 ft. Given : O.A.T : 38°C Pressure Altitude: 4000 ft Aeroplane Mass: 3400 lbs Tailwind component: 5 kt Fl

a approximately : 5040 ft

b approximately : 3680 ft

c approximately : 4200 ft

d **approximately : 3960 ft**

---

49 id 3459 (For this Question use Performance Manual SEP1 Fig. 2.4) Using the Landing Diagramm, for single engine aeroplane, determine the landing distance (from a screen height of 50 ft) required, in the following conditions: Given : Pressure altitude: 4000 ft O.A.T.: 5°C Aeroplane mass: 3530 lbs Headwind compon

a 880 ft

b **1400 ft**

c 1550 ft

d 1020 ft

32.01.03. Climb and cruise performance

32.01.03.01. Use of aeroplane flight data

50
id 3075
(For this Question use Performance Manual SEP1 Fig. 2.3) With regard to the climb performance chart for the single engine aeroplane determine the climb speed (ft/min). Given : O.A.T : ISA + 15°C Pressure Altitude: 0 ft Aeroplane Mass: 3400 lbs Flaps: up Sp

a 1370 ft/min

b **1290 ft/min**

c 1210 ft/min

d 1150 ft/min

51
id 3077
(For this Question use Performance Manual SEP1 Fig. 2.3) Using the climb performance chart, for the single engine aeroplane, determine the ground distance to reach a height of 2000 ft above the reference zero inthe following conditions: Given : O.A.T. at take-off: 25°C Airport pressure altitude: 1000 ft Aeroplane mass: 3600 lbs Sp

a 18 832 ft

b 21 505 ft

c 24 637 ft

d **18 347 ft**

52
id 3078
(For this Question use Performance Manual SEP1 Fig. 2.3) Using the climb performance chart, for the single engine aeroplane, determine the ground distance to reach a height of 1500 ft above the reference zero inthe following conditions: Given : O.A.T at Take-off: ISA Airport pressure altitude: 5000 ft Aeroplane mass: 3300

a 20 109 ft

b 18 909 ft

c 18 073 ft

d **16 665 ft**

53
id 3079
(For this Question use Performance Manual SEP1 Fig. 2.3) Using the climb performance chart, for the single engine aeroplane, determine the rate of climb and the gradient of climb in the following conditions: Given : O.A.T at Take-off: ISA Airport pressure altitude: 3000 ft Aeroplane mass: 3450 lbs Sp

a 1030 ft/min and 8,4%

b **1120 ft/min and 9,3%**

c 1170 ft/min and 9,9%

d 1310 ft/min and 11,3%

54
id 3080
(For this Question use Flight Planning & Monitoring SEP1 Fig. 2.2)Using the Power Setting Table, for the single engine aeroplane, determine the manifold pressure and fuel flow (lbs/hr) with full throttle and cruise lean mixture in the following conditions: Given: OAT: 13°C Pressure altitude: 8000 ft RPM: 2300

a 23,0 in.Hg and 69,0 lbs/hr

b **22,4 in.Hg and 69,3 lbs/hr**

c 22,4 in.Hg and 71,1 lbs/hr

d 22,4 in.Hg and 73,8 lbs/hr

55 id 3454 (For this Question use Flight Planning & Monitoring SEP1 Fig. 2.2)Using the Power Setting Table, for the single engine aeroplane, determine the cruise TAS and fuel flow (lbs/hr) with full throttle and cruise lean mixture in the following conditions: Given: OAT: 13°C Pressure altitude: 8000 ft RPM: 2300

a **160 kt and 69,3 lbs/hr**

b 158 kt and 74,4 lbs/hr

c 160 kt and 71,1 lbs/hr

d 159 kt and 71,7 lbs/hr

56 id 3455 (For this Question use Flight Planning & Monitoring SEP1 Fig. 2.3)Using the Power Setting Table, for the single engine aeroplane, determine the cruise TAS and fuel flow (lbs/hr) with full throttle and cruise lean mixture in the following conditions: Given : OAT: 3°C Pressure altitude: 6000 ft Power: Full throttle / 21,0 in

a **134 kt and 55,7 lbs/hr**

b 136 kt and 56,9 lbs/hr

c 131 kt and 56,9 lbs/hr

d 125 kt and 55,7 lbs/hr

57 id 3456 (For this Question use Flight Planning & Monitoring SEP1 Fig. 2.4)Using the Range Profile Diagramm, for the single engine aeroplane, determine the range, with 45 minutes reserve, in the following conditions: Given : O.A.T.: ISA +16°C Pressure altitude: 4000 ft Power: Full throttle / 25,0 in/Hg./ 2100 RPM

a 911 NM

b 739 NM

c 851 NM

d **865 NM**

58 id 3457 (For this Question use Flight Planning & Monitoring SEP1 Fig. 2.4)Using the Range Profile Diagramm, for the single engine aeroplane, determine the range, with 45 minutes reserve, in the following conditions: Given : O.A.T.: ISA -15°C Pressure altitude: 12000 ft Power: Full throttle / 23,0 in/Hg./ 2300 RPM

a 875 NM

b **902 NM**

c 860 NM

d 908 NM

32.01.03.02. Effect of density altitude and a/c mass

59 id 682 Assuming that the required lift exists, which forces determine an aeroplane's angle of climb?

a Weight and drag only.

b **Weight, drag and thrust.**

c Thrust and drag only.

d Weight and thrust only.

60 id 683 How does the best angle of climb and best rate of climb vary with increasing altitude?

a **Both decrease.**

b Both increase.

c Best angle of climb increases while best rate of climb decreases.

d Best angle of climb decreases while best rate of climb increases.

61 id 968 The maximum indicated air speed of a piston engined aeroplane, in level flight, is reached:

- **a** at the practical ceiling.
- **b** at the optimum cruise altitude.
- **c** at the service ceiling.
- **d** **at the lowest possible altitude.**

62 id 1871 With regard to a unaccelerated horizontal flight, which of the following statement is correct?

- **a** The minimum drag is is a function of the density altitude.
- **b** The minimum drag is a function of the pressure altitude.
- **c** **The minimum drag is proportional to the aircraft mass.**
- **d** The minimum drag is independant of the aircraft mass.

63 id 1873 Which of the following statements is correct? If the aircraft mass, in a horizontal unaccelerated flight, decreases

- **a** the minimum drag increases and the IAS for minimum drag increases.
- **b** the minimum drag increases and the IAS for minimum drag decreases.
- **c** **the minimum drag decreases and the IAS for minimum drag decreases.**
- **d** the minimum drag decreases and the IAS for minimum drag increases.

64 id 2822 A higher outside air temperature

- **a** does not have any noticeable effect on climb performance.
- **b** increases the angle of climb but decreases the rate of climb.
- **c** **reduces the angle and the rate of climb.**
- **d** reduces the angle of climb but increases the rate of climb.

65 id 2823 A headwind component increasing with altitude, as compared to zero wind condition, (assuming IAS is constant)

- **a** improves angle and rate of climb.
- **b** does not have any effect on the angle of flight path during climb.
- **c** **has no effect on rate of climb.**
- **d** decreases angle and rate of climb.

66 id 2824 A constant headwind

- **a** increases the descent distance over ground.
- **b** increases the angle of descent.
- **c** increases the rate of descent.
- **d** **increases the angle of the descent flight path.**

67 id 2825 A constant headwind component

- **a** decreases the angle of climb.
- **b** increases the best rate of climb.
- **c** **increases the angle of flight path during climb.**
- **d** increases the maximum endurance.

68 The pilot of a single engine aircraft has established the climb performance. The carriage of an additional passenger will cause the climb performance to be:

id 5503

a Unchanged, if a short field take-off is adopted

b Improved

c Unchanged

d **Degraded**

32.01.03.03. Endurance and the effects

69 What affect has a tailwind on the maximum endurance speed?

id 2030

a Tailwind only effects holding speed.

b **No affect**

c The IAS will be increased.

d The IAS will be decreased.

32.02. PERFORMANCE OF MULTI-ENGINE A/C

32.02.01. Definitions of terms and speeds

70
id 5511
At a given mass, the stalling speed of a twin engine aircraft is 100 kt in the landing configuration. The minimum speed a pilot must maintain in short final is:

a 120 kt
b 115 kt
c 125 kt
d **130 kt**

71
id 6177
Vx is defined as :

a Speed for best cruise
b **speed for best angle of climb**
c speed for best rate of climb
d speed for best glide

72
id 6178
Vy is defined as :

a speed for best rate of climb single engine
b speed for best angle of climb
c **speed for best rate of climb**
d speed for soft field landing

73
id 6184
in a multi engine aeroplane the critical engine is

a The engine which causes the largest reduction in climb performance upon engine failure
b **The engine which causes the largest yawing moment upon engine failure**
c The engine which causes the longest landing distance upon engine failure
d The engine which causes the greatest rolling moment upon engine failure

74
id 6207
Stalling speed in landing configuration is defined as the stalling speed

a **with flaps in landing configuration and gear down.**
b with flaps in landing configuration and gear up.
c with flaps up and gear up.
d with flaps up and gear down

75
id 6247
Stalling speed in landing configuration are certified with:

a **flap in landing configuration and gear down**
b flap in clean configuration and gear down
c flap in take of position and gear down
d flap in clean configuration and gear up

32.02.01.01. Any new terms used for multi-engine a/c

76 id 2034 | A multi engine aeroplane is flying at the minimum control speed (VMCA). Which parameter(s) must be maintainable after engine failure?

a **Straight flight**

b Straight flight and altitude

c Heading, altitude and a positive rate of climb of 100 ft/min

d Altitude

77 id 2656 | The critical engine inoperative

a decreases the power required because of the lower drag caused by the windmilling engine.

b does not affect the aeroplane performance since it is independent of the power plant.

c **increases the power required because of the greater drag caused by the windmilling engine and the compensation for the yaw effect.**

d increases the power required and decreases the total drag due to the windmilling engine.

78 id 2826 | The speed V1 is defined as

a speed for best angle of climb.

b take-off climb speed.

c **take-off decision speed.**

d engine failure speed.

79 id 2829 | The speed VLO is defined as

a design low operating speed.

b **landing gear operating speed.**

c long distance operating speed.

d lift off speed.

80 id 2830 | VX is

a **the speed for best angle of climb.**

b the speed for best rate of climb.

c the speed for best specific range.

d the speed for best angle of flight path.

81 id 2831 | The speed for best rate of climb is called

a **VY.**

b VX.

c V2.

d VO.

32.02.02. Importance of performance calculations

32.02.02.01. Determination of performance

82 id 1547 | Which of the following speeds can be limited by the 'maximum tyre speed'?

a Lift-off IAS.

b **Lift-off groundspeed.**

c Lift-off TAS.

d Lift-off EAS.

83 id 1833 | If other factors are unchanged, the fuel mileage (nautical miles per kg) is

a higher with a forward centre of gravity position.

b independent from the centre of gravity position.

c lower with an aft centre of gravity position.

d **lower with a forward centre of gravity position.**

84 id 2231 | Changing the take-off flap setting from flap 15° to flap 5° will normally result in :

a a shorter take-off distance and an equal climb.

b **a longer take-off distance and a better climb.**

c a better climb and an equal take-off distance.

d a shorter take-off distance and a better climb.

85 id 2782 | The result of a higher flap setting up to the optimum at take-off is

a a longer take-off run.

b an increased acceleration.

c a higher V1.

d **a shorter ground roll.**

32.02.02.02. Consideration of effects of pressure alt.

86 id 1866 | The effect of a higher take-off flap setting up to the optimum is:

a a decrease of the field length limited take-off mass but an increase of the climb limited take-off mass.

b **an increase of the field length limited take-off mass but a decrease of the climb limited take-off mass.**

c a decrease of both the field length limited take-off mass and the climb limited take-off mass.

d an increase of both the field length limited take-off mass and the climb limited take-off mass.

87 id 1867 | When the outside air temperature increases, then

a the field length limited take-off mass and the climb limited take-off mass increases.

b **the field length limited take-off mass and the climb limited take-off mass decreases.**

c the field length limited take-off mass decreases but the climb limited take-off mass increases.

d the field length limited take-off mass increases but the climb limited take-off mass decreases.

88 id 2027 | Which of the following combinations adversely affects take-off and initial climb performance ?

a Low temperature and low relative humidity

b Low temperature and high relative humidity

c High temperature and low relative humidity

d **High temperature and high relative humidity**

---

89 id 2028 | What effect has a downhill slope on the take-off speeds? The slope

a **decreases the take-off speed V1.**

b decreases the TAS for take-off.

c increases the IAS for take-off.

d has no effect on the take-off speed V1.

---

90 id 2229 | Which of the following are to be taken into account for the runway in use for take-off ?

a Airport elevation, runway slope, standard temperature, standard pressure and wind components.

b **Airport elevation, runway slope, outside air temperature, pressure altitude and wind components.**

c Airport elevation, runway slope, standard temperature, pressure altitude and wind components.

d Airport elevation, runway slope, outside air temperature, standard pressure and wind components.

---

91 id 2575 | What is the effect of increased mass on the performance of a gliding aeroplane?

a **The speed for best angle of descent increases.**

b There is no effect.

c The gliding angle decreases.

d The lift/drag ratio decreases.

---

92 id 2785 | A higher pressure altitude at ISA temperature

a increases the climb limited take-off mass.

b decreases the take-off distance.

c **decreases the field length limited take-off mass.**

d has no influence on the allowed take-off mass.

---

93 id 2787 | The take-off distance required increases

a **due to slush on the runway.**

b due to downhill slope because of the smaller angle of attack.

c due to head wind because of the drag augmentation.

d due to lower gross mass at take-off.

---

94 id 2788 | Due to standing water on the runway the field length limited take-off mass will be

a **lower.**

b higher.

c unaffected.

d only higher for three and four engine aeroplanes.

95 On a dry runway the accelerate stop distance is increased
id 2789

a by headwind.

b **by uphill slope.**

c by low outside air temperature.

d by a lower take-off mass because the aeroplane accelerates faster to V1.

---

96 A runway is contaminated with 0.5 cm of wet snow. The flight manual of a light twin nevertheless authorises a landing in these conditions. The landing distance will be, in relation to that for a dry runway:
id 5494

a **increased**

b unchanged

c reduced

d substantially decreased

---

97 A runway is contaminated by a 0,5 cm layer of wet snow. The take-off is nevertheless authorized by a light-twin's flight manual. The take-off distance in relation to a dry runway will be:
id 5504

a very significantly decreased

b unchanged

c decreased

d **increased**

---

98 The lift- off speed and take-off safety speed (V2) when flap position is changed from 10° to 5° will:
id 6179

a increase and decrease

b decrease and increase

c **increase and increase**

d decrease and decrease

---

99 A change of runway in use from a runway slope of 1 % downhill to a runway slope of 1 % uphill will:
id 6181

a increase take-off run, decrease take-off distance

b decrease take-off run, decrease take-off distance

c **increase take-off run, increase take-off distance**

d decrease take-off run, increase take-off distance

32.02.03. Elements of performance

32.02.03.01. Take-off and landing distances

---

100 For a turboprop powered aeroplane, a 2200 m long runway at the destination aerodrome is expected to be "wet". The "dry runway" landing distance, should not exceed:
id 650

a 1771 m.

b **1339 m.**

c 1540 m.

d 1147 m.

101 id 1556 | Which of the following factors favours the selection of a low flap setting for the take-off?

a High field elevation, no obstacles in the climb-out path, low ambient temperature and short runway.

b Low field elevation, close-in obstacles in the climb-out path, long runway and a high ambient temperature.

c **High field elevation, distant obstacles in the climb-out path, long runway and a high ambient temperature.**

d Low field elevation, no obstacles in the climb-out path, short runway and a low ambient temperature.

102 id 1587 | What is the advantage of a balanced field length condition ?

a A balanced field length provides the greatest margin between "net" and "gross" take-off flight paths.

b A balanced take-off provides the lowest elevator input force requirement for rotation.

c For a balanced field length the required take-off runway length always equals the available runway length.

d **A balanced field length gives the minimum required field length in the event of an engine failure.**

103 id 1864 | The stopway is an area which allows an increase only in :

a the take-off distance available.

b the take-off run available.

c **the accelerate-stop distance available.**

d the landing distance available.

104 id 2216 | Field length is balanced when

a **take-off distance equals accelerate-stop distance.**

b calculated V2 is less than 110% VMCA and V1, VR, VMCG.

c all engine acceleration to V1 and braking distance for rejected take-off are equal.

d one engine acceleration from V1 to VLOF plus flare distance between VLOF and 35 feet are equal.

105 id 5493 | Following a take-off determined by the 50ft (15m) screen height, a light twin climbs on a 10% over-the-ground climb gradient. It will clear a 900 m high obstacle in relation to the runway (horizontally), situated at 10 000 m from the 50 ft clearing point with an obstacle clearance of:

a 85 m

b 100 m

c **115 m**

d It will not clear the obstacle

106 id 5496 | An aircraft has two certified landing flaps positions, 25° and 35°. If a pilot chooses 25° instead of 35°, the aircraft will have:

a an increased landing distance and degraded go-around performance

b a reduced landing distance and better go-around performance

c **an increased landing distance and better go-around performance**

d a reduced landing distance and degraded go-around performance

107 id 5497 The take-off distance of an aircraft is 800m in standard atmosphere, no wind at 0 ft pressure-altitude. Using the following corrections : "± 20 m / 1 000 ft field elevation " "- 5 m / kt headwind " "+ 10 m / kt tail wind " "± 15 m / % runway slope " "± 5 m / °C deviation from standard temperature " The take-off distance from an airport at 2 000 ft elevat

a **970 m**

b 890 m

c 870 m

d 810 m

108 id 5501 The take-off distance of an aircraft is 600m in standard atmosphere, no wind at 0 ft pressure-altitude. Using the following corrections: "± 20 m / 1 000 ft field elevation" "- 5 m / kt headwind" "+ 10 m / kt tail wind" "± 15 m / % runway slope" "± 5 m / °C deviation from standard temperature" The take-off distance from an airport at 1 000 ft elevation, temperatu

a 685 m

b 715 m

c 555 m

d **755 m**

109 id 5502 An aircraft has two certified landing flaps positions, 25° and 35°. If a pilot chooses 35° instead of 25°, the aircraft will have:

a a reduced landing distance and better go-around performance

b **a reduced landing distance and degraded go-around performance**

c an increased landing distance and degraded go-around performance

d an increased landing distance and better go-around performance

110 id 5505 Following a take-off, limited by the 50 ft screen height, a light twin climbs on a gradient of 5%. It will clear a 160 m obstacle in relation to the runway (horizontally), situated at 5 000 m from the 50 ft point with an obstacle clearance margin of:

a 90 m

b **105 m**

c 75 m

d it will not clear the obstacle

111 id 5510 If the airworthiness documents do not specify a correction for landing on a wet runway; the landing distance must be increased by:

a 20 %

b 5 %

c 10 %

d **15 %**

112 id 6183 Considering a turbine powered aircraft, when passing 35 feet at the end of the take-off distance, the speed should not be less than

a 1.3 Vmcg

b 1.1 Vmcg

c **1.2 Vs1 or 1.1 Vmca**

d 1.1 Vs1 or 1.3 Vmcg

32.02.03.02. Rate of climb and descent

113 id 686 The angle of climb with flaps extended, compared to that with flaps retracted, will normally be:

- **a** Not change.
- **b** Larger.
- **c** **Smaller.**
- **d** Increase at moderate flap setting, decrease at large flap setting.

114 id 964 In a steady descending flight (descent angle GAMMA) equilibrium of forces acting on the aeroplane is given by: (T = Thrust, D = Drag, W = Weight)

- **a** T + D = - W *sin GAMMA
- **b** T - W *sin GAMMA = D
- **c** T + W *sin GAMMA = D
- **d** **T - D = W *sin GAMMA**

115 id 965 An aeroplane executes a steady glide at the speed for minimum glide angle. If the forward speed is kept constant, what is the effect of a lower mass? Rate of descent / Glide angle / CL/CD ratio

- **a** increases / constant / increases
- **b** decreases / constant / decreases
- **c** increases / increases / constant
- **d** **increases / increases / decreases**

116 id 966 An aeroplane is in a power off glide at best gliding speed. If the pilot increases pitch attitude the glide distance:

- **a** **decreases.**
- **b** increases.
- **c** remains the same.
- **d** may increase or decrease depending on the aeroplane.

117 id 1400 Which of the following combinations basically has an effect on the angle of descent in a glide? (Ignore compressibility effects.)

- **a** **Configuration and angle of attack.**
- **b** Mass and altitude.
- **c** Altitude and configuration.
- **d** Configuration and mass.

118 id 1401 Two identical aeroplanes at different masses are descending at idle thrust. Which of the following statements correctly describes their descent characteristics ?

- **a** **At a given angle of attack, both the vertical and the forward speed are greater for the heavier aeroplane.**
- **b** There is no difference between the descent characteristics of the two aeroplanes.
- **c** At a given angle of attack the heavier aeroplane will always glide further than the lighter aeroplane.
- **d** At a given angle of attack the lighter aeroplane will always glide further than the heavier aeroplane.

119 id 1413 Which of the following provides maximum obstacle clearance during climb?

- **a** **The speed for maximum climb angle Vx.**
- **b** 1.2Vs.
- **c** The speed for maximum rate of climb.
- **d** The speed, at which the flaps may be selected one position further UP.

120 id 1414 Which of the following factors will lead to an increase of ground distance during a glide, while maintaining the appropriate minimum glide angle speed?

a Decrease of aircraft mass.

b Increase of aircraft mass.

c **Tailwind.**

d Headwind.

121 id 1415 Which of the following factors leads to the maximum flight time of a glide?

a High mass.

b **Low mass.**

c Headwind.

d Tailwind.

122 id 2029 During climb to the cruising level, a headwind component

a decreases the climb time.

b increases the amount of fuel for the climb.

c increases the climb time.

d **decreases the ground distance flown during that climb.**

123 id 2037 What is the influence of the mass on maximum rate of climb (ROC) speed if all other parameters remain constant ?

a **The ROC speed increases with increasing mass.**

b The ROC speed decreases with increasing mass.

c The ROC is affected by the mass, but not the ROC speed.

d The ROC and the ROC speed are independant of the mass.

124 id 2668 When flying the "Backside of Thrustcurve" means

a the thrust required is independent of the airspeed.

b **a lower airspeed requires more thrust.**

c a thrust reduction results in an acceleration of the aeroplane.

d a lower airspeed requires less thrust because drag is decreased.

125 id 5492 A climb gradient required is 3,3%. For an aircraft maintaining 100 kt true airspeed , no wind, this climb gradient corresponds to a rate of climb of approximately:

a **330 ft/min**

b 3 300 ft/min

c 3,30 m/s

d 33,0 m/s

126 id 5495 The climb gradient of an aircraft after take-off is 6% in standard atmosphere, no wind, at 0 ft pressure altitude. Using the following corrections: "± 0,2 % / 1 000 ft field elevation" "± 0,1 % / °C from standard temperature" " - 1 % with wing anti-ice" " - 0,5% with engine anti-ice" The climb gradient after take-off from an airport situated at 1 000 ft, 17° C; QNH

a 4,7 %

b 4,3 %

c **3,9 %**

d 4,9 %

127 id 5508 | With an true airspeed of 194 kt and a vertical speed of 1 000 ft/min, the climb gradient is about :

- **a** **3°**
- **b** 3%
- **c** 5°
- **d** 8%

---

128 id 5509 | On a twin engined piston aircraft with variable pitch propellers, for a given mass and altitude, the minimum drag speed is 125 kt and the holding speed (minimum fuel burn per hour) is 95 kt. The best rate of climb speed will be obtained for a speed:

- **a** inferior to 95 kts
- **b** **equal to 95 kt**
- **c** is between 95 and 125 kt
- **d** equal to 125 kt

32.02.03.03. Cruise altitudes and altitude ceiling

129 id 283 | Considering TAS for maximum range and maximum endurance, other factors remaining constant,

- **a** TAS for maximum range will increase with increased altitude while TAS for maximum endurance will decrease with increased altitude.
- **b** both will decrease with increasing altitude.
- **c** both will stay constant regardless of altitude.
- **d** **both will increase with increasing altitude.**

---

130 id 287 | A twin engined aeroplane in cruise flight with one engine inoperative has to fly over high ground. In order to maintain the highest possible altitude the pilot should choose:

- **a** the speed at the maximum lift.
- **b** the long range speed.
- **c** the speed corresponding to the minimum value of (lift / drag)^3/2.
- **d** **the speed corresponding to the maximum value of the lift / drag ratio.**

---

131 id 1297 | The optimum altitude

- **a** decreases as mass decreases.
- **b** **increases as mass decreases and is the altitude at which the specific range reaches its maximum.**
- **c** is the altitude at which the specific range reaches its minimum.
- **d** is the altitude up to which cabin pressure of 8 000 ft can be maintained.

---

132 id 1404 | The maximum horizontal speed occurs when:

- **a** **The maximum thrust is equal to the total drag.**
- **b** The thrust is equal to the maximum drag.
- **c** The thrust is equal to minimum drag.
- **d** The thrust does not increase further with increasing speed.

133 id 1405 | With respect to the optimum altitude, which of the following statements is correct ?

a **An aeroplane sometimes flies above or below the optimum altitude because optimum altitude increases continuously during flight.**

b An aeroplane always flies below the optimum altitude, because Mach buffet might occur.

c An aeroplane always flies at the optimum altitude because this is economically seen as the most attractive altitude.

d An aeroplane flies most of the time above the optimum altitude because this yields the most economic result.

134 id 1406 | How does the lift coefficient for maximum range vary with altitude? (No compressibility effects.)

a The lift coefficient decreases with increasing altitude.

b **The lift coefficient is independant of altitude.**

c The lift coefficient increases with increasing altitude.

d Only at low speeds the lift coefficient decreases with increasing altitude.

135 id 2031 | During climb with all engines, the altitude where the rate of climb reduces to 100 ft/min is called:

a Absolute ceiling

b **Service ceiling**

c Thrust ceiling

d Maximum transfer ceiling

136 id 2032 | The maximum rate of climb that can be maintained at the absolute ceiling is:

a 125 ft/min

b **0 ft/min**

c 500 ft/min

d 100 ft/min

137 id 2775 | To achieve the maximum range over ground with headwind the airspeed should be

a reduced to the gust penetration speed.

b equal to the speed for maximum range cruise with no wind.

c lower compared to the speed for maximum range cruise with no wind.

d **higher compared to the speed for maximum range cruise with no wind.**

138 id 2833 | The absolute ceiling

a **is the altitude at which the rate of climb theoretically is zero.**

b can be reached only with minimim steady flight speed

c is the altitude at which the best climb gradient attainable is 5%

d is the altitude at which the aeroplane reaches a maximum rate of climb of 100 ft/min.

139 id 5506 | The pilot of a light twin engine aircraft has calculated a 4 000 m service ceiling, based on the forecast general conditions for the flight and a take-off mass of 3 250 kg. If the take-off mass is 3 000 kg, the service ceiling will be:

a **higher than 4 000 m.**

b less than 4 000 m.

c unchanged, equal to 4 000 m.

d only a new performance analysis will determine if the service ceiling is higher or lower than 4 000 m.

32.02.03.04. Payload/range trade-offs

140 id 4199 Which statement regarding the relationship between traffic load and range is correct?

- **a** **The traffic load can be limited by the desired range.**
- **b** The maximum zero fuel mass limits the maximum quantity of fuel.
- **c** The maximum landing mass is basically equal to the maximum zero fuel mass.
- **d** The maximum traffic load is not limited by the reserve fuel quantity.

32.02.03.05. Speed/economy trade-offs

141 id 967 Maximum endurance for a piston engined aeroplane is achieved at:

- **a** **The speed that approximately corresponds to the maximum rate of climb speed.**
- **b** The speed for maximum lift coefficient.
- **c** The speed for minimum drag.
- **d** The speed that corresponds to the speed for maximum climb angle.

142 id 1402 What is the effect of a head wind component, compared to still air, on the maximum range speed (IAS) and the speed for maximum climb angle respectively?

- **a** Maximum range speed increases and maximum climb angle speed increases.
- **b** Maximum range speed decreases and maximum climb angle speed increases.
- **c** Maximum range speed decreases and maximum climb angle speed decreases.
- **d** **Maximum range speed increases and maximum climb angle speed stays constant.**

143 id 1411 The speed for maximum lift/drag ratio will result in :

- **a** The maximum endurance for a propeller driven aeroplane.
- **b** The maximum range for a jet aeroplane.
- **c** **The maximum range for a propeller driven aeroplane.**
- **d** The maximum angle of climb for a propeller driven aeroplane.

144 id 1881 For a piston engined aeroplane, the speed for maximum range is :

- **a** that which gives the maximun value of lift
- **b** that with the minimum power
- **c** **that which gives the maximum lift to drag ratio.**
- **d** 1.4 times the stall speed in clean configuration.

145 id 5507 The flight manual of a light twin engine recommends two cruise power settings, 65 and 75 %. The 75% power setting in relation to the 65 % results in:

- **a** an increase in speed and fuel-burn/distance, but an unchanged fuel-burn per hour.
- **b** same speed and an increase of the fuel-burn per hour and fuel-burn/distance.
- **c** **an increase in speed, fuel consumption and fuel-burn/distance.**
- **d** same speed and fuel-burn/distance, but an increase in the fuel-burn per hour.

32.02.04. Use of performance graphs and tabulated data

32.02.04.01. Performance section of flight manual

146
id 2572

(For this Question use Performance Manual MRJT1) With regard to the graph for the light twin aeroplane, will the accelerate and stop distance be achieved in a take-off where the brakes are released before take-off power is set?

a Performance will be better than in the chart.

b **No, the performance will be worse than in the chart.**

c Yes, the chart has been made for this situation.

d It does not matter which take-off technique is being used.

32.03. PERFORM. OF A/C CERTIFIED UNDER JAR/FAR

32.03.01. Take-off

32.03.01.01. Definitions of terms and speeds used

147 id 649 During the certification flight testing of a twin engine turbojet aeroplane, the real take-off distances are equal to: - 1547 m with all engines running - 1720 m with failure of critical engine at V1, with all other things remaining unchanged. The take-off distance adopted for the certification file is:

a 1978 m.

b **1779 m.**

c 1547 m.

d 1720 m.

148 id 652 The take-off decision speed V1 is:

a sometimes greater than the rotation speed VR.

b not less than V2min, the minimum take-off safety speed.

c a chosen limit. If an engine failure is recognized after reaching V1 the take-off must be aborted.

d **a chosen limit. If an engine failure is recognized before reaching V1 the take-off must be aborted.**

149 id 662 Minimum control speed on ground, VMCG, is based on directional control being maintained by:

a **primary aerodynamic control only.**

b primary aerodynamic control and nosewheel.

c primary aerodynamic control, nosewheel steering and differential braking.

d nosewheel steering only.

150 id 663 The take-off performance requirements for transport category aeroplanes are based upon:

a only one engine operating.

b all engines operating.

c **failure of critical engine or all engines operating which ever gives the largest take off distance.**

d failure of critical engine.

151 id 664 Which of the following distances will increase if you increase V1?

a All Engine Take-off distance

b Take-off distance

c **Accelerate Stop Distance**

d Take-off run

152 id 666 The length of a clearway may be included in:

a **the take-off distance available.**

b the accelerate-stop distance available.

c the take-off run available.

d the distance to reach V1.

153 id 1045 An airport has a 3000 metres long runway, and a 2000 metres clearway at each end of that runway. For the calculation of the maximum allowed take-off mass, the take-off distance available cannot be greater than:

a 4000 metres.

b 6000 metres.

c **4500 metres.**

d 5000 metres.

---

154 id 1417 Complete the following statement regarding the take-off performance of an aeroplane in performance class A. Following an engine failure at (i) .... and allowing for a reaction time of (ii) .... a correctly loaded aircraft must be capable of decelerating to a halt within the (iii) ....

a (i) V2 (ii) 3 seconds (iii) Take-off distance available.

b **(i) V1 (ii) 2 seconds (iii) Accelerate - stop distance available.**

c (i) V1 (ii) 1 second (iii) Accelerate - stop distance available.

d (i) V1 (ii) 2 seconds (iii) Take-off distance available.

---

155 id 1418 With regard to a take-off from a wet runway, which of the following statements is correct?

a Screen height cannot be reduced.

b When the runway is wet, the V1 reduction is sufficient to maintain the same margins on the runway length.

c In case of a reverser inoperative the wet runway performance information can still be used.

d **The screen height can be lowered to reduce the mass penalties.**

---

156 id 1554 Which of the following set of factors could lead to a V2 value which is limited by VMCA?

a High take-off mass, low flap setting and high field elevation.

b Low take-off mass, low flap setting and low field elevation.

c High take-off mass, high flap setting and low field elevation.

d **Low take-off mass, high flap setting and low field elevation.**

---

157 id 1560 What is the advantage of balancing V1, even in the event of a climb limited take-off?

a The take-off distance required with one engine out at V1 is the shortest.

b **The safety margin with respect to the runway length is greatest.**

c The accelerate stop distance required is the shortest.

d The climb limited take-off mass is the highest.

---

158 id 1564 During the flight preparation a pilot makes a mistake by selecting a V1 greater than that required. Which problem will occur when the engine fails at a speed immediatly above the correct value of V1?

a It may lead to over-rotation.

b The one engine out take-off distance required may exceed the take-off distance available.

c V2 may be too high so that climb performance decreases.

d **The stop distance required will exceed the stop distance available.**

159 Which of the following statements is correct?
id 1565

a The accelerate stop distance required is independant of the runway condition.

b The performance limited take-off mass is independant of the wind component.

c **The climb limited take-off mass is independant of the wind component.**

d The take-off distance with one engine out is independant of the wind component.

160 Which of the following statements is correct?
id 1568

a VR should not be higher than V1.

b **VR is the speed at which the pilot should start to rotate the aeroplane.**

c VR should not be higher than 1.05 VMCG.

d VR is the speed at which, during rotation, the nose wheel comes off the runway.

161 Which statement is correct?
id 1572

a The climb limited take-off mass increases when a larger take-off flap setting is used.

b The performance limited take-off mass is the highest of: field length limited take-off mass climb limited take-off mass obstacle limited take-off mass.

c The climb limited take-off mass will increase if the headwind component increases.

d **The climb limited take-off mass depends on pressure altitude and outer air temperature**

162 Which is the correct sequence of speeds during take-off?
id 1577

a **VMCG, V1, VR, V2.**

b V1, VMCG, VR, V2.

c V1, VR, VMCG, V2.

d V1, VR, V2, VMCA.

163 Which statement regarding V1 is correct?
id 1583

a When determining the V1, reverse thrust is only allowed to be taken into account on the remaining symmetric engines.

b V1 is not allowed to be greater than VMCG.

c **V1 is not allowed to be greater than VR.**

d The V1 correction for up-slope is negative.

164 When an aircraft takes off with the mass limited by the TODA:
id 1584

a the "balanced take-off distance" equals 115% of the "all engine take-off distance".

b the distance from brake release to V1 will be equal to the distance from V1 to the 35 feet point.

c **the actual take-off mass equals the field length limited take-off mass.**

d the end of the runway will be cleared by 35 feet following an engine failure at V1.

165 VR cannot be lower than:
id 1865

a 1.2 Vs for twin and three engine jet aeroplane.

b 105% of V1 and VMCA.

c **V1 and 105% of VMCA.**

d 1.15 Vs for turbo-prop with three or more engines.

166 id 1869 | The one engine out take-off run is the distance between the brake release point and:

a the lift-off point.

b **the middle of the segment between VLOF point and 35 ft point.**

c the point where V2 is reached.

d the point half way between V1 and V2.

167 id 1870 | The decision speed at take-off (V1) is the calibrated airspeed:

a **below which take-off must be rejected if an engine failure is recognized, above which take-off must be continued.**

b at which the take-off must be rejected.

c below which the take-off must be continued.

d at which the failure of the critical engine is expected to occur.

168 id 2035 | The speed V2 is

a the lowest safety airspeed at which the aeroplane is under control with aerodynamic surfaces in the case of an engine failure.

b that speed at which the PIC should decide to continue or not the take-off in the case of an engine failure.

c the lowest airspeed required to retract flaps without stall problems.

d **the take-off safety speed.**

169 id 2036 | Which take-off speed is affected by the presence or absence of stopway and/or clearway ?

a VMCG

b V2

c **V1**

d VMCA

170 id 2218 | Maximum and minimum values of V1 are limited by :

a V2 and VMCG

b V2 and VMCA

c VR and VMCA

d **VR and VMCG**

171 id 2219 | Take-off run is defined as the

a distance to 35 feet with an engine failure at V1 or 115% all engine distance to 35 feet.

b distance to V1 and stop, assuming an engine failure at V1.

c **horizontal distance along the take-off path from the start of the take-off to a point equidistant between the point at which VLOF is reached and the point at which the aeroplane is 35 ft above the take-off surface.**

d Distance from brake release to V2.

172 id 2220 | The minimum value of V2 must exceed "air minimum control speed" by:

a 20%

b 15%

c **10%**

d 30%

173 id 2223	Which of the following statements is correct ?

a A clearway is an area beyond the runway which can be used for an aborted take-off.

b An underrun is an area beyond the runway end which can be used for an aborted take-off.

c **A stopway means an area beyond the take-off runway, able to support the aeroplane during an aborted take-off.**

d If a clearway or a stopway is used, the liftoff point must be attainable at least at the end of the permanent runway surface.

174 id 2227	Which of the following is true with regard to VMCA (air minimum control speed)?

a The aeroplane is uncontrollable below VMCA

b **Straight flight can not be maintained below VMCA, when the critical engine has failed.**

c The aeroplane will not gather the minimum required climb gradient

d VMCA only applies to four-engine aeroplanes

175 id 2228	Which of the following will decrease V1?

a **Inoperative anti-skid.**

b Increased take-off mass.

c Inoperative flight management system.

d Increased outside air temperature.

176 id 2776	The take-off run is

a the distance of the point of brake release to a point equidistant between the point at which VLOF is reached and the point at which the aeroplane attains a height of 50 ft above the runway assuming a failure of the critical engine at V1.

b 1.5 times the distance from the point of brake release to a point equidistant between the point at which VLOF is reached and the point at which the aeroplane attains a height of 35 ft above the runway with all engines operative.

c 1.15 times the distance from the point of brake release to the point at which VLOF is reached assuming a failure of the critical engine at V1.

d **the horizontal distance along the take-off path from the start of the take-off to a point equidistant between the point at which VLOF is reached and the point at which the aeroplane is 35 ft above the take-off surface.**

177 id 2777	Can the length of a stopway be added to the runway length to determine the take-off distance available ?

a Yes, but the stopway must be able to carry the weight of the aeroplane.

b No, unless its centerline is on the extended centerline of the runway.

c **No.**

d Yes, but the stopway must have the same width as the runway.

178 id 2779	In case of an engine failure recognized below V1

a the take-off is to be continued unless V1 is less than the balanced V1.

b the take-off may be continued if a clearway is available.

c the take-off should only be rejected if a stopway is available.

d **the take-off must be rejected.**

179 In case of an engine failure which is recognized at or above V1
id 2780

- **a** the take-off should be rejected if the speed is still below VR.
- **b** the take-off must be rejected if the speed is still below VLOF.
- **c** a height of 50 ft must be reached within the take-off distance.
- **d** **the take-off must be continued.**

---

180 The take-off distance available is
id 2781

- **a** **the length of the take-off run available plus the length of the clearway available.**
- **b** the runway length minus stopway.
- **c** the runway length plus half of the clearway.
- **d** the total runway length, without clearway even if this one exists.

---

181 V2 has to be equal to or higher than
id 2793

- **a** **1.1 VMCA.**
- **b** 1.15 VMCG.
- **c** 1.1 VSO.
- **d** 1.15 VR.

---

182 V1 has to be
id 2794

- **a** equal to or higher than V2.
- **b** equal to or higher than VMCA.
- **c** higher than VR.
- **d** **equal to or higher than VMCG.**

---

183 The speed VR
id 2795

- **a** must be equal to or lower than V1.
- **b** must be higher than V2.
- **c** must be higher than VLOF.
- **d** **is the speed at which rotation to the lift-off angle of attack is initiated.**

---

184 The take-off mass could be limited by
id 2799

- **a** the maximum brake energy only.
- **b** **the take-off distance available (TODA), the maximum brake energy and the climb gradient with one engine inoperative.**
- **c** the climb gradient with one engine inoperative only.
- **d** the take-off distance available (TODA) only.

---

185 The speed V2 is defined for jet aeroplane as
id 2828

- **a** lift off speed.
- **b** **take-off climb speed or speed at 35 ft.**
- **c** take-off decision speed.
- **d** critical engine failure speed.

186 id 4358 | The take-off safety speed V2min for turbo-propeller powered aeroplanes with more than three engines may not be less than:

- **a** 1.2 Vs
- **b** 1.3 Vs
- **c** **1.15 Vs**
- **d** 1.2 Vs1

---

187 id 4359 | The take-off safety speed V2 for two-engined or three-engined turbo propeller powered aeroplanes may not be less than:

- **a** 1.15 Vs
- **b** 1.3 Vs
- **c** **1.2 Vs**
- **d** 1.15 Vs1

---

188 id 5209 | Which statement regarding V1 is correct ?

- **a** The correction for up-slope on the balanced V1 is negative
- **b** V1 may not be higher than Vmcg
- **c** When determining V1, reverse thrust may only be used on the remaining symmetric engines
- **d** **VR may not be lower than V1**

---

189 id 6230 | Vmca is defined as the minimum speed at which directional control can be maintained in flight with an engine failure in a defined configuration which include:

- **a** flaps in landing position
- **b** Landing gear down
- **c** **zero yaw**
- **d** 0° bank

---

190 id 6232 | The correct definition of TODA

- **a** TORA plus stopway
- **b** TODA with a safety factor of 1.33
- **c** **TORA plus clearway**
- **d** TORR plus stopway

---

191 id 6233 | The correct definition of stopway is:

- **a** an area beyond TORA which is free of obstacles to a height of 50 ft
- **b** usable runway plus clearway
- **c** LDA plus clearway
- **d** **An area beyond TORA where an aircraft may be stopped safely**

---

192 id 6238 | Vmu is defined as

- **a** max dive speed
- **b** **minimum unstick speed**
- **c** max recovery speed
- **d** max brake energy speed

32.03.01.02. Runway variables

193 id 667 How does runway slope affect allowable take-off mass, assuming other factors remain constant and not limiting?

- **a A downhill slope increases allowable take-off mass.**
- **b** An uphill slope increases take-off mass.
- **c** Allowable take-off mass is not affected by runway slope.
- **d** A downhill slope decreases allowable take-off mass.

194 id 2790 Uphill slope

- **a increases the take-off distance more than the accelerate stop distance.**
- **b** decreases the accelerate stop distance only.
- **c** decreases the take-off distance only.
- **d** increases the allowed take-off mass.

195 id 2796 If the take-off mass of an aeroplane is brake energy limited a higher uphill slope would

- **a increase the maximum mass for take-off.**
- **b** decrease the maximum mass for take-off.
- **c** have no effect on the maximum mass for take-off.
- **d** decrease the required take-off distance.

196 id 3744 Which statement related to a take-off from a wet runway is correct?

- **a** The use of a reduced Vr is sufficient to maitain the same safety margins as for a dry runway
- **b A reduction of screen height is allowed in order to reduce weight penalties**
- **c** In case of a reverser inoperative the wet runway performance information can still be used
- **d** Screenheight reduction can not be applied because of reduction in obstacle clearance.

197 id 4204 Which statement regarding the influence of a runway down-slope is correct for a balanced take-off? Down-slope...

- **a reduces V1 and reduces take-off distance required (TODR).**
- **b** increases V1 and reduces the accelerate stop distance required (ASDR).
- **c** reduces V1 and increases the accelerate stop distance required (ASDR).
- **d** increases V1 and increases the take-off distance required (TODR).

198 id 6186 At a given aerodrome the runway length, pressure altitude and OAT, as well as other data are known, and the flap setting for takeoff is selected to be flaps 10° to get maximum possible takeoff weight at this aerodrome.As the aircraft departs, the flap handle is erroneously set to 20°. Now the takeoff performance

- **a vs RWY increases**
- **b** vs climb requirement increases.
- **c** vs service ceiling increase
- **d** vs OBST increases (determined by a distant obstacle)

199 id 6203 | Which of the following statements is correct?

a A clearway is an area beyond the runway which can be used for an aborted takeoff

b **A stopway is an area beyond the take-off runway designated for decelerating and able to support the aeroplane during an aborted take-off.**

c An underrun is an area beyond the runway end which can be used for an aborted takeoff

d If a clearway or stopway is used, the lift-off point must be attainable at least at the end of TORA

200 id 6209 | If the ANC is larger than the PNC for the runway you :

a **Cannot land on the runway**

b Can land only in the opposite direction

c Can land on the runway

d Can land only if the runway is bare and dry.

32.03.01.03. Aeroplane variables

201 id 669 | The required Take-off Distance (TOD) and the field length limited Take-off Mass (TOM) are different for the zero flap case and take-off position flap case. What is the result of flap setting in take-off position compared to zero flap position?

a Increased TOD required and increased field length limited TOM.

b Increased TOD required and decreased field length limited TOM.

c **Decreased TOD required and increased field length limited TOM.**

d Decreased TOD required and decreased field length limited TOM.

202 id 1039 | The determination of the maximum mass on brake release, of a certified turbojet aeroplane with 5°, 15° and 25° flaps angles on take-off, leads to the following values, with wind: Flap angle: 5° 15° 25° Runway limitation (kg): 66 000 69 500 71 500 2nd segment slope limitation: 72 200 69 000 61 800

a 69 000 kg / 15 deg

b **67 700 kg / 15 deg**

c 72 200 kg / 5 deg

d 69 700 kg / 25 deg

203 id 1548 | Reduced take-off thrust should normally not be used when:

a it is dark.

b **windshear is reported on the take-off path.**

c the runway is dry.

d the runway is wet.

204 id 1549 | Reduced take-off thrust should normally not be used when:

a **anti skid is not usable.**

b it is dark.

c the runway is wet.

d the OAT is ISA +10°C

205 Reduced take-off thrust should normally not be used when:
id 1550

- **a** it is dark.
- **b** **the runway is contaminated.**
- **c** the runway is wet.
- **d** obstacles are present close to the end of the runway.

---

206 The use of reduced take-off thrust is permitted, only if:
id 1551

- **a** The actual take-off mass (TOM) including a margin is greater than the performance limited TOM.
- **b** The take-off distance available is lower than the take-off distance required one engine out at V1.
- **c** **The actual take-off mass (TOM) is lower than the field length limited TOM.**
- **d** The actual take-off mass (TOM) is greater than the climb limited TOM.

---

207 Which statement about reduced thrust is correct?
id 1580

- **a** **Reduced thrust can be used when the actual take-off mass is less than the field length limited take-off mass.**
- **b** Reduced thrust is primarily a noise abatement procedure.
- **c** Reduced thrust is used in order to save fuel.
- **d** In case of reduced thrust V1 should be decreased.

---

208 Reduced take-off thrust
id 2783

- **a** can be used if the actual take-off mass is higher than the performance limited take-off mass.
- **b** **has the benefit of improving engine life.**
- **c** is not recommended at very low temperatures (OAT).
- **d** can be used if the headwind component during take-off is at least 10 kt.

---

209 If the take-off mass of an aeroplane is tyre speed limited, downhill slope would
id 2797

- **a** increase the maximum mass for take-off.
- **b** decrease the maximum mass for take-off.
- **c** **have no effect on the maximum mass for take-off.**
- **d** increase the required take-off distance.

---

210 If T/0 weight is limited by Climb Requirements (A/C weight > 5700kg), then it means:
id 6185

- **a** That the A/C will not be able to climb to its filed cruising level at a higher weight (all engines operating)
- **b** That the presence of obstacles along the departure flight path is limiting the T/O weight.
- **c** That a higher weight at constant climb cannot be maintained up to 5000 feet pressure altitude.
- **d** **That at higher T/0 weight certain climb gradients during the T/O climb cannot be attained in case of an engine failure**

---

211 Which T/O condition is most likely resulting in the poorest climb performance?
id 6189

- **a** Sea level field, ISA -10o, T/O flaps 10°.
- **b** Sea level field, ISA + 5o, T/O flaps 10°
- **c** **5000' field elevation, ISA + 20o, T/O flaps 30°**
- **d** 5000' field elevation, ISA -5o. T/O flaps 10°

32.03.01.04. Meteorological variables

212 id 278 | Other factors remaining constant and not limiting, how does increasing pressure altitude affect allowable take-off mass?

a Allowable take-off mass remains uninfluenced up to 5000 ft PA.

b Allowable take-off mass increases.

c There is no effect on allowable take-off mass.

d **Allowable take-off mass decreases.**

213 id 653 | What will be the effect on an aeroplane's performance if aerodrome pressure altitude is decreased?

a It will increase the accelerate stop distance.

b It will increase the take-off distance required.

c It will increase the take-off ground run.

d **It will decrease the take-off distance required.**

214 id 654 | What will be the influence on the aeroplane performance if aerodrome pressure altitude is increased?

a **It will increase the take-off distance.**

b It will decrease the take-off distance.

c It will increase the take-off distance available.

d It will increase the accelerate stop distance available.

215 id 670 | How is VMCA influenced by increasing pressure altitude?

a VMCA decreases with increasing pressure altitude.

b VMCA is not affected by pressure altitude.

c **VMCA increases with increasing pressure altitude.**

d VMCA increases with pressure altitude higher than 4000 ft.

216 id 671 | Which one of the following is not affected by a tail wind?

a the field limited take-off mass.

b **the climb limited take-off mass.**

c the obstacle limited take-off mass.

d the take-off run.

217 id 1585 | For a take-off from a contaminated runway, which of the following statements is correct?

a Dry snow is not considered to affect the take-off performance.

b The greater the depth of contamination at constant take-off mass, the more V1 has to be decreased to compensate for decreasing friction.

c **The performance data for take-off must be determined in general by means of calculation, only a few values are verified by flight tests.**

d A slush covered runway must be cleared before take-off, even if the performance data for contaminated runway is available.

218 id 2784 How is wind considered in the take-off performance data of the Aeroplane Operations Manuals ?

- **a** **Not more than 50% of a headwind and not less than 150% of the tailwind.**
- **b** Unfactored headwind and tailwind components are used.
- **c** Not more than 80% headwind and not less than 125% tailwind.
- **d** Since take-offs with tailwind are not permitted, only headwinds are considered.

32.03.01.05. Take-off speeds

219 id 665 Which of the following answers is true?

- **a** V1 > Vlof
- **b** **V1 <= VR**
- **c** V1 > VR
- **d** V1 < VMCG

220 id 672 Which statement is correct?

- **a** VR is the lowest climb speed after engine failure.
- **b** **VR is the speed at which rotation should be initiated.**
- **c** In case of engine failure below VR the take-off should be aborted.
- **d** VR is the lowest speed for directional control in case of engine failure.

221 id 673 Which statement is correct?

- **a** VR must not be less than 1.05 VMCA and not less than 1.1 V1.
- **b** VR must not be less than VMCA and not less than 1.05 V1.
- **c** VR must not be less than 1.1 VMCA and not less than V1.
- **d** **VR must not be less than 1.05 VMCA and not less than V1.**

222 id 674 Which of the following represents the minimum for V1?

- **a** VLOF
- **b** **VMCG**
- **c** VMU
- **d** VR

223 id 675 Which of the following represents the maximum value for V1 assuming max tyre speed and max brake energy speed are not limiting?

- **a** V2
- **b** VMCA
- **c** **VR**
- **d** VREF

224 id 677 In the event of engine failure below V1, the first action to be taken by the pilot in order to decelerate the aeroplane is to:

- **a** deploy airbrakes or spoilers.
- **b** reverse engine thrust.
- **c** **apply wheel brakes.**
- **d** reduce the engine thrust.

225 id 1047 — The lowest take-off safety speed (V2 min) is:

a 1.20 Vs for all turboprop powered aeroplanes.

b 1.20 Vs for all turbojet aeroplanes.

c 1.15 Vs for all turbojet aeroplanes.

d **1.15 Vs for four-engine turboprop aeroplanes and 1.20 Vs for two or three-engine turboprop aeroplanes.**

---

226 id 1419 — If the value of the balanced V1 is found to be lower than VMCG, which of the following is correct ?

a **The take-off is not permitted.**

b The one engine out take-off distance will become greater than the ASDR.

c The VMCG will be lowered to V1.

d The ASDR will become greater than the one engine out take-off distance.

---

227 id 1546 — The speed V2 of a jet aeroplane must be greater than:

a 1.3V1.

b 1.2VMCG.

c 1.05VLOF.

d **1.2Vs.**

---

228 id 1559 — How is V2 affected if T/O flaps 20° is chosen instead of T/O flaps 10°?

a V2 has the same value in both cases.

b **V2 decreases if not restricted by VMCA.**

c V2 increases in proportion to the angle at which the flaps are set.

d V2 has no connection with T/O flap setting, as it is a function of runway length only.

---

229 id 6182 — Vr for transport category aircraft must be at least:

a less than V1

b **1.05 x Vmca**

c 1.05 x Vth

d 1.2 x Vmca

---

230 id 6190 — one of the requirements regarding Vr is that it must not be less than

a 1.15 x Vmca

b **1.05 x Vmcg**

c 1.2 x Vmca

d Vmca

---

231 id 6195 — How is V2 determined?

a 1.3 x V1

b Lowest of 1.2 x VS and 1.1 x VMC

c **Highest of 1.2 x VS and 1.1 x VMC**

d 1,5 x V1

232 id 6200 | The effect on a too late rotation will be an

a **increase the ground roll but climb ability will be god**

b decrease both the ground roll and climb ability

c decrease the ground roll but increase the climb ability

d increase the ground roll and decrease the climb ability

---

233 id 6211 | Maximum tire speed Vmax tyre are limited to speed due to

a **centripetal force on the tire**

b heat released during braking

c gear retraction speed

d gear operating speed Vlo

---

234 id 6213 | Define Vef, the critical engine failure speed:

a the lowest speed for engine failure where the aircraft is controllable airborne

b **the speed at which the critical engine is assumed to fail during take-off**

c the speed at which the critical engine is assumed to fail during landing

d the speed at which the airplane have best climb performance

---

235 id 6214 | During take-off calculation, using a low V1 will, assuming other condition being equal give

a **a shorter accelerate stop distance required and a relative long take-off distance required**

b a long accelerate stop distance required and a relative short take-off distance required

c V1 have no influence on take-off distance required

d a short accelerate stop distance required, take-off distance required remains the same

---

236 id 6229 | Calculate the V2 for a four engine jet a/c with this performance: Vs=100 Kt, Vmca=113 Kt.

a 110 Kt.

b 135.6 Kt.

c 143 Kt.

d **124,3 Kt.**

---

237 id 6237 | With a decreased flap setting from 20° to 10° on take off the effect will be:-

a **VLOF and V2 would both increase**

b VLOF would increase but V2 would decrease

c VLOF would decrease

d VLOF would decrease and V2 would increase

---

238 id 6249 | During take off, the time between critical engine failure and V1 (recognition time) is assumed to be approximately:

a 5 seconds

b 6 seconds

c **2 seconds**

d 0 seconds

32.03.01.06. Take-off distance

239 id 668 | Provided all other parameters stay constant. Which of the following alternatives will decrease the take-off ground run?

a Decreased take-off mass, increased pressure altitude, increased temperature.

b Increased pressure altitude, increased outside air temperature, increased take-off mass.

c Increased outside air temperature, decreased pressure altitude, decreased flap setting.

d **Decreased take-off mass, increased density, increased flap setting.**

240 id 676 | During certification flight testing on a four engine turbojet aeroplane the actual take-off distances measured are: - 3050 m with failure of the critical engine recognised at V1 - 2555 m with all engines operating and all other things being equal The take-off distance adopted for the certification file is:

a 2938 m

b 3513 m

c 2555 m

d **3050 m**

241 id 1044 | During certification test flights for a turbojet aeroplane, the actual measured take-off runs from brake release to a point equidistant between the point at which VLOF is reached and the point at which the aeroplane is 35 feet above the take-off surface are: - 1747 m, all engines operating - 1950 m, with the critical engine failure recognized at V1, the other factors remaining unc

a **2009 m.**

b 2243 m.

c 2096 m.

d 1950 m.

242 id 1562 | During the flight preparation the climb limited take-off mass (TOM) is found to be much greater than the field length limited TOM using 5° flap. In what way can the performance limited TOM be increased? There are no limiting obstacles.

a By selecting a higher V2.

b **By selecting a higher flap setting.**

c By selecting a lower V2.

d By selecting a lower flap setting.

32.03.02. Accelerate-stop distance

32.03.02.01. Concept of balanced field length

243 id 277 | In which of the following distances can the length of a stopway be included?

a In the take-off run available.

b In the one-engine failure case, take-off distance.

c In the all-engine take-off distance.

d **In the accelerate stop distance available.**

244 id 678 | If the antiskid system is inoperative, which of the following statements is true?

a **The accelerate stop distance increases.**

b The accelerate stop distance decreases.

c It has no effect on the accelerate stop distance.

d Take-off with antiskid inoperative is not permitted.

245 id 1553 | Which statement concerning the inclusion of a clearway in take-off calculation is correct?

a The usable length of the clearway is not limited.

b **The field length limited take-off mass will increase.**

c V1 is increased.

d V1 remains constant.

246 id 2791 | Balanced V1 is selected

a for a runway length limited take-off with a clearway to give the highest mass.

b for a runway length limited take-off with a stopway to give the highest mass.

c **if the accelerate stop distance is equal to the one engine out take-off distance.**

d if it is equal to V2.

247 id 2792 | A 'Balanced Field Length' is said to exist where:

a The one engine out take-off distance is equal to the all engine take-off distance.

b The clearway does not equal the stopway.

c The accelerate stop distance is equal to the all engine take-off distance.

d **The accelerate stop distance is equal to the take-off distance available.**

248 id 4206 | If the field length limited take off mass has been calculated using a Balanced Field Length technique, the use of any additional clearway in take off performance calculations may allow

a the obstacle clearance limit to be increased with an higher V1

b a greater field length limited take off mass but with a higher V1

c the obstacle clearance limit to be increased with no effect on V1

d **a greater field length limited take off mass but with a lower V1**

32.03.02.02. Use of flight manual charts

249 id 1555 | Concerning the landing gear, which of the following factors would limit the take-off mass?

a **Rate of rotation of the wheel at lift off and brake energy.**

b Tyre pressure and brake temperature.

c Rate of rotation of the wheel and tyre pressure.

d Nitrogen pressure in the strut and brake temperature.

250 id 1563 | Which combination of circumstances or conditions would most likely lead to a tyre speed limited take-off?

a A low runway elevation and a cross wind.

b **A high runway elevation and tail wind.**

c A high runway elevation and a head wind.

d A low runway elevation and a head wind.

251 id 1569 | The 'maximum tyre speed' limits:

a VR, or VMU if this is lower than VR.

b V1 in kt TAS.

c **VLOF in terms of ground speed.**

d V1 in kt ground speed.

252 | Before take-off the temperature of the wheel brakes should be checked. For what reason?
id 1576

a **Because overheated brakes will not perform adequately in the event of a rejected take-off.**

b To ensure that the brake wear is not excessive.

c To ensure that the wheels have warmed up evenly.

d To ensure that the thermal blow-out plugs are not melted.

253 | May anti-skid be considered to determine the take-off and landing data ?
id 2778

a Only for take-off.

b No.

c **Yes.**

d Only for landing.

254 | A higher outside air temperature (OAT)
id 2786

a increases the field length limited take-off mass.

b **decreases the brake energy limited take-off mass.**

c increases the climb limited take-off mass.

d decreases the take-off distance.

32.03.03. Initial climb

32.03.03.01. Climb segments

255 | The requirements with regard to take-off flight path and the climb segments are only specified for:
id 281

a 2 engined aeroplane.

b the failure of any engine on a multi-engined aeroplane.

c **the failure of the critical engine on a multi-engines aeroplane.**

d the failure of two engines on a multi-engined aeroplane.

256 | At which minimum height will the second climb segment end?
id 282

a When gear retraction is completed.

b 35 ft above ground.

c **400 ft above field elevation.**

d 1500 ft above field elevation.

257 | In relation to the net take-off flight path, the required 35 ft vertical distance to clear all obstacles is
id 648

a the height by which acceleration and flap retraction should be completed.

b based on pressure altitudes.

c **the minimum vertical distance between the lowest part of the aeroplane and all obstacles within the obstacle corridor.**

d the height at which power is reduced to maximum climb thrust.

258 id 661 — The minimum climb gradient required on the 2nd flight path segment after the take-off of a jet aeroplane is defined by the following parameters: 1 Gear up 2 Gear down 3 Wing flaps retracted 4 Wing flaps in take-off position 5 N engines at the take-off thrust 6 (N-1) engines at the take-off thrust 7 Speed over the path equal to V2 + 10 kt 8 Speed over the path equa

a **1, 4, 6, 9**

b 2, 3, 6, 9

c 1, 4, 5, 10

d 1, 5, 8, 10

259 id 681 — A head wind will:

a **increase the climb flight path angle.**

b increase the angle of climb.

c increase the rate of climb.

d shorten the time of climb.

260 id 1046 — (For this question use Performance Manual MRJT 1 Figure 4.4) For a twin engine turbojet aeroplane two take-off flap settings (5° and 15°) are certified. Given: Field length avalaible= 2400 m Outside air temperature= -10°C Airport pressure altitude= 7000 ft The maximum allowed take-off mass is:

a 70 000 kg

b 55 000 kg

c **56 000 kg**

d 52 000 kg

261 id 1581 — Which statement, in relation to the climb limited take-off mass of a jet aeroplane, is correct?

a The climb limited take-off mass is determined at the speed for best rate of climb.

b **The climb limited take-off mass decreases with increasing OAT.**

c 50% of a head wind is taken into account when determining the climb limited take-off mass.

d On high elevation airports equipped with long runways the aeroplane will always be climb limited.

262 id 2217 — The second segment begins

a **when landing gear is fully retracted.**

b when flap retraction begins.

c when flaps are selected up.

d when acceleration starts from V2 to the speed for flap retraction.

263 id 2222 — For take-off obstacle clearance calculations, obstacles in the first segment may be avoided

a **by banking not more than 15° between 50 ft and 400 ft above the runway elevation.**

b by banking as much as needed if aeroplane is more than 50 ft above runway elevation.

c only by using standard turns.

d by standard turns - but only after passing 1500 ft.

264 id 2226 | During take-off the third segment begins:

- **a** **when acceleration to flap retraction speed is started.**
- **b** when landing gear is fully retracted.
- **c** when acceleration starts from VLOF to V2.
- **d** when flap retraction is completed.

265 id 2798 | The first segment of the take-off flight path ends

- **a** at 35 ft above the runway.
- **b** at completion of flap retraction.
- **c** at reaching V2.
- **d** **at completion of gear retraction.**

266 id 2800 | The climb limited take-off mass can be increased by

- **a** selecting a lower VR.
- **b** selecting a lower V1.
- **c** selecting a lower V2.
- **d** **a lower flap setting for take-off and selecting a higher V2.**

267 id 4207 | The take-off mass of an aeroplane is restricted by the climb limit. What would be the effect on this limit of an increase in the headwind component?

- **a** **None.**
- **b** The effect would vary depending upon the height of any obstacle within the net take-off flight path.
- **c** The climb limited take-off mass would increase.
- **d** The climb limited take-off mass would decrease.

268 id 4208 | Which of the following statements with regard to the actual acceleration height at the beginning of the 3rd climb segment is correct?

- **a** A lower height than 400 ft is allowed in special circumstances e.g. noise abatement.
- **b** **The minimum value according to regulations is 400 ft.**
- **c** The minimum value according to regulations is 1000 ft.
- **d** There is no legal minimum value, because this will be determined from case to case during the calculation of the net flight path.

269 id 4514 | On a segment of the take-off flight path an obstacle requires a minimum gradient of climb of 2.6% in order to provide an adequate margin of safe clearance. At a mass of 110000 kg the gradient of climb is 2.8%. For the same power and assuming that the sine of the angle of climb varies inversely with mass, at what maximum mass will the aeroplane be able to achieve the minimum gradient?

- **a** 102150 kg
- **b** **118455 kg**
- **c** 121310 kg
- **d** 106425 kg

270 id 6192 | What is the maximum angle of bank allowed when planning a curved flight path during climbout (A/C weight > 5700 kg)?

- **a** 10°
- **b** **15°**
- **c** 25°
- **d** 30°

271 id 6204 In the second segment during take off, flap and gear are:

- **a** **TKOF position/ retracted**
- **b** Flap2/retracting
- **c** Flap up/gear down
- **d** Flap up/retracted

272 id 6205 Required net climb gradients in the 1st segment for 3-engine aircraft with one engine out are:

- **a** 0,1 %
- **b** **0,3%**
- **c** 2,7%
- **d** 5,5%

32.03.03.02. All engines operating

273 id 1977 A four jet-engined aeroplane (mass = 150 000 kg) is established on climb with all engines operating. The lift-to-drag ratio is 14. Each engine has a thrust of 75 000 Newtons. The gradient of climb is: (given: g= 10 m/s²)

- **a** 1.286%.
- **b** **12.86%.**
- **c** 27%.
- **d** 7.86%.

274 id 4203 Which of the following statements is applicable to the acceleration height at the beginning of the 3rd climb segment ?

- **a** **The maximum acceleration height depends on the maximum time take-off thrust may be applied.**
- **b** The minimum legally allowed acceleration height is at 1500 ft.
- **c** There is no requirement for minimum climb performance when flying at the acceleration height.
- **d** The minimum one engine out acceleration height must be maintained in case of all engines operating.

32.03.03.03. Engine inoperative operation

275 id 660 Given that the characteristics of a three engine turbojet aeroplane are as follows: Thrust = 50 000 Newton / Engine g = 10 m/s² Drag = 72 569 N Minimum gross gradient (2nd segment) = 2.7% SIN(Angle of climb) = (Thrust- Drag) / Weight The maximum take-off mass under 2nd segment conditions is:

- **a** **101 596 kg**
- **b** 286 781 kg
- **c** 74 064 kg
- **d** 209 064 kg

32.03.03.04. Obstacle clearance requirements

276 id 279 If there is a tail wind, the climb limited TOM will:

- **a** increase.
- **b** **not be affected.**
- **c** decrease.
- **d** increase in the flaps extended case.

277 id 280 | Which of the following sets of factors will increase the climb-limited TOM?

a Low flap setting, high PA, high OAT.

b High flap setting, low PA, low OAT.

c **Low flap setting, low PA, low OAT.**

d Low flap setting, high PA, low OAT.

---

278 id 684 | An operator shall ensure that the net take-off flight path clears all obstacles. The half-width of the obstacle-corridor at the distance D from the end of the TODA is at least:

a **90m + 0.125D**

b 0.125D

c -90m + 1.125D

d 90m + D/0.125

---

279 id 1048 | The net flight path climb gradient after take-off compared to the gross climb gradient is:

a larger.

b **smaller.**

c equal.

d depends on type of aircraft.

---

280 id 1552 | When V1 has to be reduced because of a wet runway the one engine out obstacle clearance / climb performance:

a decreases / decreases.

b increases / increases.

c remains constant / remains constant.

d **decreases / remains constant.**

---

281 id 1567 | Which of the following statements, concerning the obstacle limited take-off mass for performance class A aeroplane, is correct?

a It should be calculated in such a way that there is a margin of 50 ft with respect to the "net take off flight path".

b It should not be corrected for 30° bank turns in the take-off path.

c **It should be determined on the basis of a 35 ft obstacle clearance with the respect to the "net take-off flight path".**

d It cannot be lower than the corresponding climb limited take-off mass.

---

282 id 1582 | Regarding the obstacle limited take-off mass, which of the following statements is correct?

a Wind speed plays no role when calculating this particular mass.

b **A take-off in the direction of an obstacle is also permitted in tail wind condition.**

c The obstacle limited mass can never be lower than the climb limited take-off mass.

d The maximum bank angle which can be used is 10°.

---

283 id 2801 | In the event that the take-off mass is obstacle limited and the take-off flight path includes a turn, the bank angle should not exceed

a **15 degrees up to height of 400 ft.**

b 10 degrees up to a height of 400 ft.

c 20 degrees up to a height of 400 ft.

d 25 degrees up to a height of 400 ft.

284 id 4201 | Which speed provides maximum obstacle clearance during climb?

a V2.

b V2 + 10 kt.

c The speed for maximum rate of climb.

d **The speed for which the ratio between rate of climb and forward speed is maximum.**

285 id 6234 | The requirement with regards to obstacles in is that the net take-off flight path should clear all obstacles by

a **minimum 35 feet vertically**

b minimum 50 feet vertically

c minimum 100 feet vertically

d minimum 15 meters vertically

286 id 6235 | According to the obstacle requirements the take-off path may by curved, but bank angle must not exceed

a 30°

b 20°

c **15°**

d 25°

32.03.04. Climb

32.03.04.01. Use of flight manual performance charts

287 id 685 | What is the effect of tail wind on the time to climb to a given altitude?

a The effect on time to climb will depend on the aeroplane type.

b The time to climb increases.

c The time to climb decreases.

d **The time to climb does not change.**

288 id 2190 | (For this question use Performance Manual MRJT 1 Figure 4.5) With regard to the take-off performance of a twin jet aeroplane, why does the take-off performance climb limit graph show a kink at 30°C, pressure altitude 0?

a The engines are pressure limited at lower temperature, at higher temperatures they are temperature limited.

b At higher temperatures the VMBE determines the climb limit mass.

c At lower temperatures one has to take the danger of icing into account.

d **At higher temperatures the flat rated engines determines the climb limit mass.**

289 id 2191 | (For this question use Performance Manual MRJT 1 Figure 4.5) Consider the take-off performance for the twin jet aeroplane climb limit chart. Why has the wind been omitted from the chart?

a The effect of the wind must be taken from another chart.

b **The climb limit performances are taken relative to the air.**

c There is no effect of the wind on the climb angle relative to the ground.

d There is a built-in safety measure.

290 id 2802 | You climb with a climb speed schedule 300/.78. What do you expect in the crossover altitude 29 200 ft (OAT = ISA) ?

a During the acceleration to the Mach number .78 the rate of climb is approximately zero.

b The rate of climb decreases since climb performance at a constant Mach number is grossly reduced as compared to constant IAS.

c **The rate of climb increases since the constant IAS-climb is replaced by the constant Mach-climb.**

d No noticeable effect since the true airspeed at 300 kt IAS and .78 Mach are the same (at ISA temperature TAS=460 kt)

291 id 2804 | If the climb speed schedule is changed from 280/.74 to 290/.74 the new crossover altitude is

a higher.

b **lower.**

c unchanged.

d only affected by the aeroplane gross mass.

32.03.04.02. Significant airspeeds for climb

292 id 687 | Vx and Vy with take-off flaps will be:

a same as that for clean configuration.

b higher than that for clean configuration.

c **lower than that for clean configuration.**

d changed so that Vx increases and Vy decreases compared to clean configuration.

293 id 688 | Other factors remaining constant, how does increasing altitude affect Vx and Vy:

a Vx will decrease and Vy will increase.

b Both will remain the same.

c **Vx will increase Vy will decrease.**

d Both will increase.

294 id 689 | How does TAS vary in a constant Mach climb in the troposphere?

a TAS is not related to Mach Number.

b TAS increases.

c TAS is constant.

d **TAS decreases.**

295 id 961 | Which of the following three speeds of a jet aeroplane are basically identical? The speeds for:

a maximum drag, maximum endurance and maximum climb angle.

b **holding, maximum climb angle and minimum glide angle.**

c maximum range, minimum drag and minimum glide angle.

d maximum climb angle, minimum glide angle and maximum range.

296 id 971 | A jet aeroplane is climbing at a constant IAS and maximum climb thrust, how will the climb angle / the pitch angle change?

a Reduce / decrease.

b Reduce / remain constant.

c Remain constant / decrease.

d Remain constant / become larger.

297 id 1403 | With a jet aeroplane the maximum climb angle can be flown at approximately:

a 1.1 Vs

b The highest CL/CD² ratio.

c 1.2 Vs

d The highest CL/CD ratio.

298 id 1407 | What happens to the drag of a jet aeroplane if, during the initial climb after take off, constant IAS is maintained? (Assume a constant mass.)

a The drag increases initially and decreases thereafter.

b The drag increases considerably.

c The drag decreases.

d The drag remains almost constant.

299 id 1408 | Which of the following sequences of speed for a jet aeroplane is correct ? (from low to high speeds)

a Maximum endurance speed, maximum range speed, maximum angle of climb speed.

b Vs, maximum range speed, maximum angle climb speed.

c Vs, maximum angle climb speed, maximum range speed.

d Maximum endurance speed, long range speed, maximum range speed.

300 id 1412 | What happens when an aeroplane climbs at a constant Mach number?

a The "1.3G" altitude is exceeded, so Mach buffet will start immediately.

b The TAS continues to increase, which may lead to structural problems.

c IAS stays constant so there will be no problems.

d The lift coefficient increases.

301 id 1578 | A jet aeroplane is climbing with constant IAS. Which operational speed limit is most likely to be reached?

a The Maximum operating Mach number.

b The Stalling speed.

c The Minimum control speed air.

d The Mach limit for the Mach trim system.

302 id 1878 | A jet aeroplane is climbing at constant Mach number below the tropopause. Which of the following statements is correct?

a IAS increases and TAS decreases.

b IAS increases and TAS increases.

c IAS decreases and TAS increases.

d IAS decreases and TAS decreases.

303 id 2686 | As long as an aeroplane is in a positive climb

- **a** **VX is always below VY.**
- **b** VX is sometimes below and sometimes above VY depending on altitude.
- **c** VX is always above VY.
- **d** VY is always above VMO.

---

304 id 2687 | The best rate of climb at a constant gross mass

- **a** **decreases with increasing altitude since the thrust available decreases due to the lower air density.**
- **b** increases with increasing altitude since the drag decreases due to the lower air density.
- **c** increases with increasing altitude due to the higher true airspeed.
- **d** is independent of altitude.

---

305 id 2821 | Higher gross mass at the same altitude decreases the gradient and the rate of climb whereas

- **a** VX is increased and VY is decreased.
- **b** **VY and VX are increased.**
- **c** VY and VX are not affected by a higher gross mass.
- **d** VY and VX are decreased.

---

306 id 3751 | Given a jet aircraft. Which order of increasing speeds in the performance diagram is correct?

- **a** Vs, Maximum range speed, Vx
- **b** Maximum endurance speed, Long range speed, Maximum range speed
- **c** **Vs, Vx, Maximum range speed**
- **d** Maximum endurance speed, Maximum range speed, Vx

---

307 id 6239 | Vne is defined as the

- **a** for best rate of climb
- **b** **never exceed speed, which must not be higher than 0.9 times Vd**
- **c** never exceed speed in turbulence
- **d** never exceed speed with gear extended

32.03.05. Cruise

32.03.05.01. Use of cruise charts

---

308 id 976 | Which statement with respect to the step climb is correct?

- **a** A step climb is executed in principle when, just after leveling off, the 1.3g altitude is reached.
- **b** A step climb must be executed immediately after the aeroplane has exceeded the optimum altitude.
- **c** A step climb is executed because ATC desires a higher altitude.
- **d** **Executing a desired step climb at high altitude can be limited by buffet onset at g-loads larger than 1.**

309 id 1573 | Which of the following factors determines the maximum flight altitude in the "Buffet Onset Boundary" graph?

a **Aerodynamics.**

b Theoretical ceiling.

c Service ceiling.

d Economy.

---

310 id 1575 | Which data can be extracted from the Buffet Onset Boundary Chart?

a The value of maximum operating Mach number (MMO) at various masses and power settings.

b **The values of the Mach number at which low speed and Mach buffet occur at various masses and altitudes.**

c The value of the critical Mach number at various masses and altitudes.

d The value of the Mach number at which low speed and shockstall occur at various weights and altitudes.

---

311 id 2834 | The aerodynamic ceiling

a **is the altitude at which the speeds for low speed buffet and for high speed buffet are the same.**

b depends upon thrust setting and increase with increasing thrust.

c is the altitude at which the best rate of climb theoretically is zero.

d is the altitude at which the aeroplane reaches 50 ft/min.

---

312 id 2835 | The maximum operating altitude for a certain aeroplane with a pressurised cabin

a is only certified for four-engine aeroplanes.

b is dependent on aerodynamic ceiling.

c is dependent on the OAT.

d **is the highest pressure altitude certified for normal operation.**

---

313 id 2837 | Why are 'step climbs' used on long distance flights ?

a Step climbs do not have any special purpose for jet aeroplanes; they are used for piston engine aeroplanes only.

b Step climbs are only justified if at the higher altitude less headwind or more tailwind can be expected.

c **To fly as close as possible to the optimum altitude as aeroplane mass reduces.**

d To respect ATC flight level constraints.

---

314 id 5284 | Which statement with respect to the step climb is correct ?

a A step climb provides better economy than a cruise climb.

b In principle a step climb is performed immediately after the aircraft has exceeded the optimum altitude.

c A step climb may not be performed unless it is indicated in the filed flight plan.

d **Performing a step climb based on economy can be limited by the 1.3-g altitude.**

32.03.05.02. Cruise control

315 id 64 — With all other things remaining unchanged and with T the outside static air temperature expressed in degrees K, the hourly fuel consumption of a turbojet powered aeroplane in a cruise flight with a constant Mach Number and zero headwind,is as follows:

- **a** independent from T
- **b** proportional to $1/T^2$
- **c** proportional to 1/T
- **d** **proportional to T**

316 id 65 — Two identical turbojet aeroplanes (whose specific fuel consumption is assumed to be constant) are in a holding pattern at the same altitude. The mass of the first one is 95 000 kg and its hourly fuel consumption is equal to 3100 kg/h. Since the mass of the second one is 105 000 kg, its hourly fuel consumption is:

- **a** **3426 kg/h**
- **b** 3602 kg/h
- **c** 3787 kg/h
- **d** 3259 kg/h

317 id 284 — For jet-engined aeroplanes, what is the effect of increased altitude on specific range?

- **a** Decreases.
- **b** **Increases.**
- **c** Does not change.
- **d** Increases only if there is no wind.

318 id 286 — Long range cruise is a flight procedure which gives:

- **a** a specific range which is 99% of maximum specific range and a lower cruise speed.
- **b** a 1% higher TAS for maximum specific range.
- **c** an IAS which is 1% higher than the IAS for maximum specific range.
- **d** **a specific range which is about 99% of maximum specific range and higher cruise speed.**

319 id 290 — With zero wind, the angle of attack for maximum range for an aeroplane with turbojet engines is:

- **a** equal to that of maximum lift to drag ratio.
- **b** equal to that maximum endurance.
- **c** equal to that corresponding to zero induced drag.
- **d** **lower than that of maximum lift to drag ratio.**

320 id 291 — Two identical turbojet aeroplane (whose specific fuel consumptions are considered to be equal) are at holding speed at the same altitude. The mass of the first aircraft is 130 000 kg and its hourly fuel consumption is 4300 kg/h. The mass of the second aircraft is 115 000 kg and its hourly fuel consumption is:

- **a** 3365 kg/h.
- **b** 4044 kg/h.
- **c** **3804 kg/h.**
- **d** 3578 kg/h.

321 id 292 A jet aeroplane equipped with old engines has a specific fuel consumption of 0.06 kg per Newton of thrust and per hour and, in a given flying condition, a fuel mileage of 14 kg per Nautical Mile. In the same flying conditions, the same aeroplane equipped with modern engines with a specific fuel consumption of 0.035 kg per Newton of thrust and per hour, has a fuel mileage of:

a 14 kg/NM.

b **8.17 kg/NM.**

c 11.7 kg/NM.

d 10.7 kg/NM.

---

322 id 651 At a given altitude, when a turbojet aeroplane mass is increased by 5% - assuming the engines specific consumption remains unchanged -, its hourly consumption is approximately increased by:

a 7.5%

b **5%**

c 10%

d 2.5%

---

323 id 690 The optimum long-range cruise altitude for a turbojet aeroplane:

a **increases when the aeroplane mass decreases.**

b is always equal to the powerplant ceiling.

c is independent of the aeroplane mass.

d is only dependent on the outside air temperature.

---

324 id 972 A jet aeroplane is flying long range cruise. How does the specific range / fuel flow change?

a **Increase / decrease.**

b Increase / increase.

c Decrease / increase.

d Decrease / decrease.

---

325 id 974 During a cruise flight of a jet aeroplane at constant flight level and at the maximum range speed, the IAS / the drag will:

a **decrease / decrease.**

b increase / decrease.

c increase / increase.

d decrease / increase.

---

326 id 1294 The speed for maximum endurance

a **is always lower than the speed for maximum specific range.**

b is the lower speed to achieve 99% of maximum specific range.

c can either be higher or lower than the speed for maximum specific range.

d is always higher than the speed for maximum specific range.

---

327 id 1295 Which of the equations below defines specific range (SR)?

a SR = Groundspeed/Total Fuel Flow

b SR = Indicated Airspeed/Total Fuel Flow

c SR = Mach Number/Total Fuel Flow

d **SR = True Airspeed/Total Fuel Flow**

328 Long range cruise is selected as
id 1296

a specific range with tailwind.

b the speed for best economy.

c the climbing cruise with one or two engines inoperative.

d the higher speed to achieve 99% of maximum specific range in zero wind.

329 For a jet transport aeroplane, which of the following is the reason for the use of 'maximum range speed' ?
id 1410

a Minimum specific fuel consumption.

b Minimum fuel flow.

c Longest flight duration.

d Minimum drag.

330 Which of the following is a reason to operate an aeroplane at 'long range speed'?
id 1416

a It is efficient to fly slightly faster than with maximum range speed.

b In order to achieve speed stability.

c The aircraft can be operated close to the buffet onset speed.

d In order to prevent loss of speed stability and tuck-under.

331 Consider the graphic representation of the power required versus true air speed (TAS), for a jet aeroplane with a given mass. When drawing the tangent out of the origin, the point of contact determines the speed of:
id 1874

a maximum specific range.

b minimum power.

c maximum endurance.

d critical angle of attack.

332 A jet aeroplane is performing a maximum range flight. The speed corresponds to:
id 1875

a the minimum drag.

b the point of contact of the tangent from the origin to the Drag versus TAS curve.

c the minimum required power.

d the point of contact of the tangent from the origin to the power required (Pr) versus TAS curve.

333 In the drag versus TAS curve for a jet aeroplane, the speed for maximum range corresponds with:
id 1876

a the point of contact of the tangent from the origin to the induced drag curve.

b the point of intersection of the parasite drag curve and the induced drag curve.

c the point of contact of the tangent from the origin to the parasite drag curve.

d the point of contact of the tangent from the origin to the drag curve.

334 The pilot of a jet aeroplane wants to use a minimum amount of fuel between two airfields. Which flight procedure should the pilot fly?
id 1877

a Maximum endurance.

b Maximum range.

c Holding.

d Long range.

335 The long range cruise speed is in relation to the speed for maximum range cruise.
id 2038

a Depending on the OAT and net mass.

b Lower

c **Higher**

d Depending on density altitude and mass.

336 The lowest point of the drag or thrust required curve of a jet aeroplane, respectively, is the point for
id 2646

a maximum specific range.

b **minimum drag.**

c maximum endurance.

d minimum specific range.

337 The airspeed for jet aeroplanes at which power required is a minimum
id 2648

a is lower than the minimum drag speed in the climb and higher than the minimum drag speed in the descent.

b is always higher than the minimum drag speed.

c **is always lower than the minimum drag speed.**

d is the same as the minimum drag speed.

338 Moving the center of gravity from the forward to the aft limit (gross mass, altitude and airspeed remain unchanged)
id 2654

a increases the power required.

b **decreases the induced drag and reduces the power required.**

c affects neither drag nor power required.

d increases the induced drag.

339 The centre of gravity near, but still within, the aft limit
id 2655

a **improves the maximum range.**

b increases the stalling speed.

c improves the longitudinal stabiity.

d decreases the maximum range.

340 The speed range between low speed buffet and high speed buffet
id 2657

a decreases with increasing mass and is independent of altitude.

b **narrows with increasing mass and increasing altitude.**

c is only limiting at low altitudes.

d increases with increasing mass.

341 The danger associated with low speed and/or high speed buffet
id 2658

a has to be considered at take-off and landing.

b can be reduced by increasing the load factor.

c exists only above MMO.

d **limits the maneuvering load factor at high altitudes.**

342 id 2659 | Which of the jet engine ratings below is not a certified rating?

a Maximum Continuous Thrust

b **Maximum Cruise Thrust**

c Go-Around Thrust

d Maximum Take-off Thrust

343 id 2660 | At constant thrust and constant altitude the fuel flow of a jet engine

a is independent of the airspeed.

b **increases slightly with increasing airspeed.**

c decreases slightly with increasing airspeed.

d increases with decreasing OAT.

344 id 2661 | At a constant Mach number the thrust and the fuel flow of a jet engine

a **decrease with decreasing ambient pressure at constant temperature.**

b increase with increasing altitude.

c are independent of outside air temperature (OAT).

d increase with decreasing ambient pressure at constant temperature

345 id 2662 | The thrust of a jet engine at constant RPM

a is independent of the airspeed.

b does not change with changing altitude.

c **increases in proportion to the airspeed.**

d is inversely proportional to the airspeed.

346 id 2663 | The intersections of the thrust available and the drag curve are the operating points of the aeroplane

a in accelerated level flight.

b in descent with constant IAS.

c **in unaccelerated level flight.**

d in unaccelerated climb.

347 id 2664 | At speeds below minimum drag

a a higher speed requires a higher thrust.

b **a lower speed requires a higher thrust.**

c the aeroplane can not be controlled manually.

d the aeroplane can be controlled only in level flight.

348 id 2666 | A higher altitude at constant mass and Mach number requires

a a lower coefficient of drag.

b a lower coefficient of lift.

c **a higher angle of attack.**

d a lower angle of attack.

349 id 2669 — "Maximum endurance"

- **a** can be flown in a steady climb only.
- **b** is the same as maximum specific range with wind correction.
- **c** **is achieved in unaccelerated level flight with minimum fuel consumption.**
- **d** can be reached with the 'best rate of climb' speed in level flight.

---

350 id 2684 — If the thrust available exceeds the thrust required for level flight

- **a** the aeroplane decelerates if the altitude is maintained.
- **b** the aeroplane descends if the airspeed is maintained.
- **c** the aeroplane decelerates if it is in the region of reversed command.
- **d** **the aeroplane accelerates if the altitude is maintained.**

---

351 id 2805 — The optimum cruise altitude is

- **a** **the pressure altitude at which the best specific range can be achieved.**
- **b** the pressure altitude at which the fuel flow is a maximum.
- **c** the pressure altitude up to which a cabin altitude of 8000 ft can be maintained.
- **d** the pressure altitude at which the speed for high speed buffet as TAS is a maximum.

---

352 id 2806 — The optimum cruise altitude increases

- **a** **if the aeroplane mass is decreased.**
- **b** if the temperature (OAT) is increased.
- **c** if the tailwind component is decreased.
- **d** if the aeroplane mass is increased.

---

353 id 2807 — Below the optimum cruise altitude

- **a** the IAS for long range cruise increases continuously with decreasing altitude.
- **b** **the Mach number for long range cruise decreases continuously with decreasing altitude.**
- **c** the TAS for long range cruise increases continuously with decreasing altitude.
- **d** the Mach number for long range cruise increases continuously with decreasing altitude.

---

354 id 2808 — Under which condition should you fly considerably lower (4 000 ft or more) than the optimum altitude ?

- **a** If at the lower altitude either more headwind or less tailwind can be expected.
- **b** If the maximum altitude is below the optimum altitude.
- **c** If the temperature is lower at the low altitude (high altitude inversion).
- **d** **If at the lower altitude either considerably less headwind or considerably more tailwind can be expected.**

---

355 id 2817 — On a long distance flight the gross mass decreases continuously as a consequence of the fuel consumption. The result is:

- **a** The specific range increases and the optimum altitude decreases.
- **b** The speed must be increased to compensate the lower mass.
- **c** **The specific range and the optimum altitude increase.**
- **d** The specific range decreases and the optimum altitude increases.

356 id 4200 In a given configuration the endurance of a piston engined aeroplane only depends on:

- a **altitude, speed, mass and fuel on board.**
- b altitude, speed and mass.
- c speed and mass.
- d speed, mass and fuel on board.

357 id 4202 Which of the following statements with regard to the optimum cruise altitude (best fuel mileage) is correct?

- a An aeroplane always flies on the optimum cruise altitude, because this is most attractive from an economy point of view.
- b An aeroplane always flies below the optimum cruise altitude, as otherwise Mach buffet can occur.
- c **An aeroplane sometimes flies above the optimum cruise altitude, because ATC normally does not allow to fly continuously at the optimum cruise altitude.**
- d An aeroplane usually flies above the optimum cruise altitude, as this provides the largest specific range.

358 id 6191 Considering driftdown requirement which one of the statements are correct?

- a Clearance between terrain and net drift down path be at least 2500 feet
- b Clearance between terrain and net drift down path be at least 1500 feet
- c **Service ceiling at alternate airport must be at least 1500 AGL**
- d No requirements for alternate airports.

359 id 6197 How does weight influence the speed for max. endurance:

- a Weight does not influence speed for max. endurance.
- b **Speed for max. endurance increases with increasing weight.**
- c Speed for max. endurance decreases linearly with increasing weight.
- d Speed for max. endurance increases proportionally with the square root of the increase in weight.

360 id 6199 For a jet engine powered airplane which of the following corresponds to the speed for best L/D?

- a VNO
- b VLO
- c Speed for best range
- d **Speed for best endurance**

361 id 6206 When flying at high altitudes speed range becomes narrow due to

- a Lack of oxygen
- b **low speed buffet onset increase and high speed buffet decrease**
- c low speed buffet onset decrease and high speed buffet increase
- d speed of sound

362 id 6225 For a jet engine powered airplane which of the following corresponds to the speed for best L/D?

- a VNO
- b VLO
- c Speed for best range
- d **Speed for best endurance**

363 id 6231 | Considering max range vs headwind :

a **higher speed for obtaining max range**

b lower speed for obtaining max range

c wind have no effect on max range

d only piston engine aircraft are affected

364 id 6240 | Maximum endurance for jet aircraft are found

a **where thrust require to maintain level flight is minimum**

b where power require to maintain level flight is minimum

c where maximum fuel consumption is maintained

d slightly above the speed for minimum drag

32.03.05.03. En-route One Engine Inoperative

365 id 1566 | The drift down requirements are based on:

a the landing mass limit at the alternate.

b the actual engine thrust output at the altitude of engine failure.

c the maximum flight path gradient during the descent.

d **the obstacle clearance during a descent to the new cruising altitude if an engine has failed.**

366 id 1570 | Which of the following statements is correct?

a **When determining the obstacle clearance during drift down, fuel dumping may be taken into account.**

b The drift down regulations require a minimum descent angle after an engine failure at cruising altitude.

c The drift down procedure requires a minimum obstacle clearance of 35 ft.

d An engine failure at high cruising altitude will always result in a drift down, because it is not permitted to fly the same altitude as with all engines operating.

367 id 1879 | With all engines out, a pilot wants to fly for maximum time. Therefore he has to fly the speed corresponding to:

a the minimum power

b the critical Mach number.

c **the minimum drag.**

d the maximum lift.

368 id 1976 | A twin jet aeroplane is in cruise, with one engine inoperative, and has to overfly a high terrain area. In order to allow the greatest clearance height, the appropriate airspeed must be the airspeed

a giving the highest Cd/Cl ratio.

b giving the lowest Cl/Cd ratio.

c **of greatest lift-to-drag ratio.**

d for long-range cruise.

369 id 2187 | An aeroplane operating under the 180 minutes ETOPS rule may be up to :

- **a** 90 minutes flying time from the first enroute airport and another 90 minutes from the second enroute airport in still air with one engine inoperative.
- **b** 180 minutes flying time to a suitable airport under the prevailing weather condition with one engine inoperative.
- **c** 180 minutes flying time from suitable airport in still air at a normal cruising speed
- **d** **180 minutes flying time to a suitable airport in still air with one engine inoperative.**

370 id 2188 | ETOPS flight is a twin engine jet aeroplane flight conducted over a route, where no suitable airport is within an area of

- **a** 60 minutes flying time in still air at the normal cruising speed.
- **b** **60 minutes flying time in still air at the approved one engine out cruise speed.**
- **c** 30 minutes flying time at the normal cruising speed.
- **d** 75 minutes flying time at the approved one engine out cruise speed.

371 id 2189 | (For this question use Performance Manual MRJT 1 Figure 4.24) With regard to the drift down performance of the twin jet aeroplane, why does the curve representing 35 000 kg gross mass in the chart for drift down net profiles start at approximately 3 minutes at FL370?

- **a** Due to higher TAS at this mass it takes more time to develop the optimal rate of descent, because of the inertia involved.
- **b** Because at this mass the engines slow down at a slower rate after failure, there is still some thrust left during four minutes.
- **c** **Because at this mass it takes about 3 minutes to decelerate to the optimum speed for drift down at the original cruising level.**
- **d** All the curves start at the same point, which is situated outside the chart.

372 id 2562 | (For this Question use Performance Manual MRJT1) With regard to the drift down performance of the twin jet aeroplane, what is meant by "equivalent gross weight at engine failure" ?

- **a** The increment represents fuel used before engine failure.
- **b** **The equivalent gross weight at engine failure is the actual gross weight corrected for OAT higher than ISA +10°C.**
- **c** This gross weight accounts for the lower Mach number at higher temperatures.
- **d** The increment accounts for the higher fuel flow at higher temperatures.

373 id 2809 | After engine failure the aeroplane is unable to maintain its cruising altitude. What is the procedure which should be applied?

- **a** **Drift Down Procedure.**
- **b** Emergency Descent Procedure.
- **c** ETOPS.
- **d** Long Range Cruise Descent.

374 id 2810 | 'Drift down' is the procedure to be applied

- **a** after cabin depressurization.
- **b** **after engine failure if the aeroplane is above the one engine out maximum altitude.**
- **c** to conduct an instrument approach at the alternate.
- **d** to conduct a visual approach if VASI is available.

375 id 2811 | If the level-off altitude is below the obstacle clearance altitude during a drift down procedure

a the recommended drift down speed should be disregarded and it should be flown at the stall speed plus 10 kt.

b **fuel jettisoning should be started at the beginning of drift down.**

c fuel jettisoning should be started when the obstacle clearance altitude is reached.

d the drift down should be flown with flaps in the approach configuration.

376 id 2818 | With one or two engines inoperative the best specific range at high altitudes is

a improved.

b **reduced.**

c not affected.

d first improved and later reduced.

32.03.05.04. Obstacle clearance en-route

377 id 3739 | The drift down procedure specifies requirements concerning the:

a **obstacle clearance during descent to the net level-off altitude**

b engine power at the altitude at which engine failure occurs

c climb gradient during the descent to the net level-off altitude

d weight during landing at the alternate

378 id 4210 | Which one of the following statements concerning drift-down is correct?

a The drift-down procedure requires a minimum obstacle clearance of 35 ft.

b The drift-down procedure requires a minimum descent angle after an engine failure at cruising altitude.

c **When determining the obstacle clearance during drift-down, fuel dumping may be taken into account.**

d An engine failure at high cruising altitude will always result in a drift-down, because it is not permitted to fly the same altitude with one engine inoperative as with all engines operating.

32.03.06. Descent and landing

32.03.06.01. Use of descent charts

379 id 962 | The lift coefficient decreases during a glide with constant Mach number, mainly because the :

a glide angle increases.

b aircraft mass decreases.

c TAS decreases.

d **IAS increases.**

380 id 969 | During a descent at constant Mach Number, the margin to low speed buffet will:

a **increase, because the lift coefficient decreases.**

b remain constant, because the Mach number remains constant.

c increase, because the lift coefficient increases.

d decrease, because the lift coefficient decreases.

381 id 973 — During a glide at constant Mach number, the pitch angle of the aeroplane will:

a increase at first and decrease later on.

b increase.

c **decrease.**

d remain constant.

382 id 975 — An aeroplane carries out a descent from FL 410 to FL 270 at cruise Mach number, and from FL 270 to FL 100 at the IAS reached at FL 270. How does the angle of descent change in the first and in the second part of the descent? Assume idle thrust and clean configuration and ignore compressibility effects.

a **Increases in the first part; is constant in the second.**

b Increases in the first part; decreases in the second.

c Is constant in the first part; decreases in the second.

d Decreases in the first part; increases in the second.

383 id 1579 — A jet aeroplane descends with constant Mach number. Which of the following speed limits is most likely to be exceeded first?

a Maximum Operational Mach Number

b Never Exceed Speed

c High Speed Buffet Limit

d **Maximum Operating Speed**

384 id 2812 — Which statement is correct for a descent without engine thrust at maximum lift to drag ratio speed?

a The higher the average temperature (OAT) the lower is the speed for descent.

b The higher the gross mass the lower is the speed for descent.

c **The higher the gross mass the greater is the speed for descent.**

d The mass of an aeroplane does not have any effect on the speed for descent.

385 id 2813 — Which statement is correct for a descent without engine thrust at maximum lift to drag ratio speed?

a A tailwind component decreases the ground distance.

b A headwind component increases the ground distance.

c A tailwind component increases fuel and time to descent.

d **A tailwind component increases the ground distance.**

386 id 4195 — Is there any difference between the vertical speed versus forward speed curves for two identical aeroplanes having different masses ? (assume zero thrust and wind)

a No difference.

b **Yes, the difference is that for a given angle of attack both the vertical and forward speeds of the heavier aeroplane will be larger.**

c Yes, the difference is that the heavier aeroplane will always glide a greater distance.

d Yes, the difference is that the lighter aeroplane will always glide a greater distance.

387 id 6188 — The approach climb requirement is established to safeguard:

a Obstacle clearance in the approach area.

b Manoeuvrability in case of landing with one engine inoperative.

c **Obstacle clearance in case of an overshoot with one engine inoperative.**

d Manoeuvrability during approach with flaps full and gear down, all engines operating

388 id 6194 The maximum demonstrated crosswind component is equal to 0.2 VSO and the following conditions exist at an airport of intended landing: VSO 70 Kt, Landing Rwy 35, Wind 300° at 20 Kt.

a headwind component exceeds the crosswind component.

b headwind component is excessive.

c crosswind component is within safe limits.

d **maximum demonstrated crosswind component is exceeded.**

---

389 id 6208 When the density increase, landing distance:

a increases

b **decreases**

c remains, density has no effect on landing distance

d

---

390 id 6212 How is obstacle clearance assured in a pull-up?

a By approach climb requirement

b By landing climb requirement

c **By minima calculations**

d By correcting required landing runway length

---

391 id 6217 Which of the following statements is correct?

a VTH is the max. speed for an aborted takeoff.

b **VTH is the correct speed when crossing the R/W threshold.**

c VTH is the correct touchdown speed.

d VTH is the maximum speed for setting approach flaps.

---

392 id 6221 May the whole runway always be used for landing?

a Yes, unless closed due to work or damage.

b Yes, unless marked with white crosses.

c Yes, if the actual A/C weight is less than max. all-up weight for the whole runway.

d **No, obstacles in the approach area may decrease the usable part of the runway.**

---

393 id 6223 The landing climb requirement is established to safeguard:

a Obstacle clearance in the approach direction.

b Obstacle clearance in the overshoot area.

c **Manoeuvrability in case of an overshoot.**

d Obstacle clearance in the approach and overshoot area.

---

394 id 6226 When flying a glideslope on a ILS with a headwind with same descent speed (CAS)

a **the rate of descent is lower and more power is needed**

b the rate of descent is higher and more power is needed

c the rate of descent is lower and less power is needed

d the rate of descent is higher and less power is needed

395 id 6236	Which of the following is the most limiting situation on landing?

a upslope with tailwind

b **downslope with tailwind**

c downslope with headwind

d upslope with headwind

396 id 6242	You are in descent on a ILS with a constant CAS, compared with a nil wind situation, a tailwind will:

a decrease descent rate

b decrease descent gradient

c increase the distance travelled over the ground in a descent

d **increase descent rate**

32.03.06.02. Maximum permitted landing mass

397 id 6196	How does airplane weight influence best angle of glide?

a Glide angle increases with airplane weight.

b Glide angle decreases with airplane weight.

c **Glide angle is not affected by airplane weight**

d It depends on the type of airplane.

398 id 6215	The allowable landing weight will:

a **Increase with uphill runway slope.**

b Increase with downhill runway slope.

c Is not affected by runway slope.

d Increase with runway contamination.

399 id 6246	At maximum landing mass, the structure of the aircraft is designed for a rate of descent of

a 200 fpm

b 250 fpm

c **600 fpm**

d 220 fpm

32.03.06.03. Approach and Landing data calcs.

400 id 288	A flight is planned with a turbojet aeroplane to an aerodrome with a landing distance available of 2400 m. Which of the following is the maximum landing distance for a dry runway?

a **1 440 m.**

b 1 250 m.

c 1 090 m.

d 1 655 m.

401 id 289 For a turbojet aeroplane, what is the maximum landing distance for wet runways when the landing distance available at an aerodrome is 3000 m?

a 1800 m.

b **1565 m.**

c 2609 m.

d 2 070 m.

402 id 1558 The approach climb requirement has been established so that the aeroplane will achieve:

a manoeuverability in the event of landing with one engine inoperative.

b obstacle clearance in the approach area.

c **minimum climb gradient in the event of a go-around with one engine inoperative.**

d manoeuverability during approach with full flaps and gear down, all engines operating.

403 id 1571 For jet aeroplanes which of the following statements is correct?

a The required landing field length is the distance from 35 ft to the full stop point.

b In any case runway slope is one of the factors taken into account when determining the required landing field length.

c An anti-skid system malfunction has no effect on the required landing field length.

d **When determining the maximum allowable landing mass at destination, 60% of the available distance is taken into account, if the runway is expected to be dry.**

404 id 1586 To minimize the risk of hydroplaning during landing the pilot should:

a use normal landing-, braking- and reverse technique.

b use maximum reverse thrust, and should start braking below the hydroplaning speed.

c **make a "positive" landing and apply maximum reverse thrust and brakes as quickly as possible.**

d postpone the landing until the risk of hydroplaning no longer exists.

405 id 2039 Approaching in turbulent wind conditions requires a change in the landing reference speed (VREF):

a Lowering VREF

b **Increasing VREF**

c Keeping same VREF because wind has no influence on IAS.

d Increasing VREF and making a steeper glide path to avoid the use of spoilers.

406 id 2221 Which of the following is true according to JAA regulations for turbopropeller powered aeroplanes not performing a steep approach?

a Maximum Landing Distance at destination is 0,95 x LDA (Landing Distance Available).

b **Maximum Landing Distance at the destination aerodrome and at any alternate aerodrome is 0,7 x LDA (Landing Distance Available).**

c Maximum Take-off Run is 0,5 x runway.

d Maximum use of clearway is 1,5 x runway.

407 id 2225 What margin above the stall speed is provided by the landing reference speed VREF?

a 1,05 VSO

b **1,30 VSO**

c 1,10 VSO

d VMCA x 1,2

408 id 2230 | Required runway length at destination airport for turboprop aeroplanes

a is 60% longer than at an alternate airport.

b is less then at an alternate airport.

c is more than at an alternate airport.

d is the same as at an alternate airport.

409 id 2232 | The landing reference speed VREF has, in accordance with international requirements, the following margins above stall speed in landing configuration:

a 20%

b 15%

c 30%

d 10%

410 id 2563 | (For this Question use Performance Manual MRJT1 Fig.4.28) What is the minimum field length required for the worst wind situation, landing a twin jet aeroplane with the anti-skid inoperative? Elevation: 2000 ft QNH: 1013 hPa Landing mass: 50 000 kg Flaps: as required for minimum landing distance Runway condition: dry Wind: Maximum allowable tailwind: 15 kt Max

a 2700 m.

b 2600 m.

c 3100 m.

d 2900 m.

411 id 2814 | The maximum mass for landing could be limited by

a the climb requirements with one engine inoperative in the landing configuration.

b the climb requirements with one engine inoperative in the approach configuration.

c the climb requirements with all engines in the approach configuration.

d the climb requirements with all engines in the landing configuration but with gear up.

412 id 2815 | The landing field length required for turbojet aeroplanes at the destination (wet condition) is the demonstrated landing distance plus

a 67%

b 92%

c 70%

d 43%

413 id 2816 | The landing field length required for jet aeroplanes at the alternate (wet condition) is the demonstrated landing distance plus

a 43%

b 92%

c 70%

d 67%

414 id 3743 | The approach climb requirement has been established to ensure:

a minimum climb gradient in case of a go-around with one engine inoperative.

b obstacle clearance in the approach area.

c manoeuvrability in case of landing with one engine inoperative.

d manoeuvrability during approach with full flaps and gear down, all engines operating.

415 id 4197 — By what factor must the landing distance available (dry runway) for a turbojet powered aeroplane be multiplied to find the landing distance required? (planning phase for destination).

- **a** **0.60**
- **b** 115/100
- **c** 1.67
- **d** 60/115

416 id 4209 — According to JAR-OPS 1, which one of the following statements concerning the landing distance for a turbojet aeroplane is correct?

- **a** The landing distance is the distance from 35 ft above the surface of the runway to the full stop.
- **b** Reverse thrust is one of the factors always taken into account when determining the landing distance required.
- **c** Malfunctioning of an anti-skid system has no effect on the required runway length.
- **d** **When determining the maximum allowable landing mass at destination, 60% of the available landing runway length should be taken into account.**

417 id 6193 — The following conditions exist at an airport of intended landing: Landing rwy. 13, Wind 140° at 30 Kt. A pilot can determine that the crosswind component is approximately

- **a** 18 Kt.
- **b** 15 Kt.
- **c** 10 Kt.
- **d** **5 Kt.**

418 id 6198 — For multiengine airplanes with MTOW < 5700 kg. the landing distance must not exceed:

- **a** 1.67 x runway length of landings distance available
- **b** 0.6 x runway length of landings distance available
- **c** 0.8 x runway length of landings distance available
- **d** **0.7 x runway length of landings distance available**

419 id 6201 — In high density the landing TAS and distance will be:

- **a** Higher / shorter
- **b** **Lower / shorter**
- **c** higher / remains
- **d** Lower / remains

420 id 6202 — The approach climb requirement (A/C weight > 5700 kg) is normally met by:

- **a** **Reducing flap setting for approach with one engine inoperative (2-engine airplanes)**
- **b** Selecting a landing field with no obstacles in the pull-up area.
- **c** a threshold speed of 2 x stall speed
- **d** Reducing final approach speed

421 id 6210 — Which wind component are you allowed to use when determining the required runway length for landing?

- **a** 100% head wind and 100% tail wind.
- **b** 50% head wind and 100% tail wind.
- **c** 150% head wind and 50% tail wind.
- **d** **50% head wind and 150 % tail wind.**

422 id 6216 — What is the minimum landing threshold clearance height for calculating landing distance?

a 50 m.

b 5 m.

c **50 feet**

d 5 feet

423 id 6219 — The required landing distance available in category A for landing is equal to

a The distance from 50 ft to complete stop, using wheel brakes only.

b 1.15 x the distance from 35 ft. height to stop, using the wheel brakes and reversing.

c **A landing distance available which, multiplied by 0.60 gives the landing distance, the landing distance being the distance from 50 ft. to complete stop.**

d 2.0 x the distance from touchdown to a complete stop.

424 id 6222 — When calculating landing distance, wind correction factor must not be more than

a 50 % headwind and 50 % tailwind

b **50 % headwind and 150 % tailwind**

c 150 % headwind and 50 % tailwind

d No wind correction required

425 id 6224 — For turboprop aircraft >5700 kg in transport CAT, the runway length requirements for landing at the alternate airport is

a 60 % of runway length available

b **70 % of runway length available**

c 67 % of runway length available

d 115 % of runway length available

426 id 6227 — For multiengine aircraft weighing less than 5700 kg in normal CAT, the landing distance required on destination must not exceed:

a 1.43 x landing distance available

b 1.67 x landing distance available

c **0.7 x landing distance available**

d 0.6 x landing distance available

427 id 6228 — 300 feet before the start of the runway there is an obstacle 50 ft high. How much is the threshold displaced:

a 0 ft

b 500 ft

c **700 ft**

d 1000ft

428 id 6244 — When calculating approach speeds, the minimum approach speed in the initial approach phase is usually

a **1,4-1,5 times Vs1**

b 1,3-1,4 times Vs1

c 1,1-1,2 times Vs1

d 1,3 times Vth

429 id 6245 | For turbojet aircraft weighing more than 5700 kg in transport CAT when landing on wet runways, the runway length must be at least

a **115 % of the runway length established under normal conditions**

b no increment needed

c 167 % of the runway length established under normal conditions

d 60 % increment

32.03.07. Practical application of an a/c perf.

32.03.07.02. cruise computations

430 id 1409 | If a flight is performed with a higher "Cost Index" at a given mass which of the following will occur?

a A better maximum range.

b A lower cruise mach number.

c **A higher cruise mach number.**

d A better long range.