

CLIMBING

- 1 The recommended IAS to achieve the maximum angle of climb is 70 kt at sea level for a light aeroplane. Select the factor which would reduce the angle of climb
 - a) a reduction in take-off weight
 - b) a decrease in IAS
 - c) a reduction in density height
 - d) a headwind

- 2 The rate of climb of two aircraft is 500 fpm. If aircraft A takes off into a 20 kt headwind and aircraft B has a 20 kt tailwind, after one minute:
 - a) aircraft A will be 100 ft higher than aircraft B.
 - b) aircraft B will be at 480 ft.
 - c) aircraft B will be 100 ft higher than aircraft A.
 - d) aircraft A and B will both be at the same height.

- 3 As an aircraft climbs higher:
 - a) the density decreases and the rate of climb decreases.
 - b) the density increases and the rate of climb increases.
 - c) the density decreases and the rate of climb increases.
 - d) the density increases and the rate of climb decreases.

- 4 The rate of climb increases when:
 - a) the aircraft's weight increases.
 - b) the temperature increases.
 - c) the altitude increases.
 - d) the engine power increases.

- 5 In a steady climb:
 - a) lift is greater than weight, thrust is greater than drag.
 - b) lift is greater than weight and opposite to weight.
 - c) lift is less than weight, thrust is greater than drag.
 - d) lift is less than weight and drag is greater than thrust.

- 6 During a climbing turn:
 - a) the rate of climb increases compared to climbing straight ahead.
 - b) the aircraft underbanks.
 - c) the lift required decreases compared to a level turn.
 - d) the aircraft may overbank.

- 7 The service ceiling of an aircraft is
- a) the altitude where the rate of climb is zero
 - b) the highest altitude permitted for flight because of manoeuvring capabilities
 - c) the altitude where a low specified rate of climb is achieved
 - d) where the aircraft achieves its best range
- 8 In order to achieve the maximum rate of climb, aircraft should be flown at the indicated airspeed which
- a) gives the best thrust/drag ratio
 - b) gives the maximum excess power
 - c) gives the best lift/drag ratio
 - d) gives the best speed/drag ratio
- 9 With reference to enroute climb performance (without lift augmentation) when a positive rate of climb is possible:
- a) the best rate of climb TAS is always lower than the best angle of climb TAS,
 - b) the best rate of climb TAS is always higher than the best angle of climb TAS,
 - c) for most aeroplanes the best rate of climb TAS is usually the same as the best angle of climb TAS.
- 10 In a steady climb, the rate of climb is a maximum when:
- a) the angle of climb is a maximum
 - b) the excess thrust is a maximum
 - c) the lift is a maximum
 - d) the excess power is a maximum
- 11 What effect will a head wind have on the angle and rate of climb
- a) the angle will decrease and the rate will increase
 - b) the angle will increase and the rate will remain unchanged
 - b) the angle will increase and the rate will decrease
 - c) the angle and rate will both increase
- 12 Compared to the maximum rate of climb, the best angle of climb is:
- a) steeper and flown at a faster speed
 - b) steeper and flown at a slower speed
 - c) shallower and flown at a faster speed
 - d) shallower and flown at a slower speed.

- 13 As altitude increases the excess power:
- a) decreases because the power available decreases and power required is constant
 - b) increases because the power available decreases and power required is constant
 - c) decreases because the power available decreases and power required increases
 - d) increases because the power required is constant and power available increases
- 14 The angle of climb is proportional to:
- a) the amount by which the lift exceeds the weight
 - b) the amount by which the thrust exceeds the drag
 - c) the amount by which the thrust exceeds the weight
 - d) the angle of attack of the wing
- 15 The speed at which the best rate of climb occurs is:
- a) near to the stalling speed
 - b) the same as the speed for the best angle of climb
 - c) slower than the speed for the best angle of climb
 - d) faster than the speed for the best angle of climb
- 16 At a constant power setting the rate of climb of an aircraft in a turn is less than when the wings are level because when in a climbing turn the:
- a) vertical component of lift is greater
 - b) power required is less
 - c) drag is greater
 - d) centre of pressure is nearer the leading edge
- 17 When an aircraft is climbing the requirements to maintain equilibrium are:
- a) thrust equals the sum of the drag and the weight component along the flight path, and lift equals the weight component perpendicular to the flight path.
 - b) thrust equals the weight component along the flight path, and lift equals the sum of the drag and weight component perpendicular to the flight path
 - c) thrust equals the weight component perpendicular to the flight path, and lift equals the weight component along the flight path
 - d) thrust is greater than the weight component along the flight path and lift is greater than weight

- 18 The angle of climb is proportional to
- a) the amount by which the lift exceeds the weight
 - b) the amount by which the thrust exceeds the drag
 - c) the angle of attack of the wing
 - d) the amount of power available
- 19 As altitude increases the excess thrust at a given IAS
- a) decreases because drag increases and thrust decreases
 - b) increases because drag decreases and thrust is constant
 - c) decreases because thrust decreases and drag is constant
 - d) decreases because the power is decreasing
- 20 To descend at the same airspeed as used in straight and level flight, power must be reduced or drag increased because the
- a) component of weight acting forward along the flightpath increases as the descent angle increases
 - b) lifting action of the wing decreases as the angle of attack decreases
 - c) component of weight acting forward along the flightpath decreases as the rate of descent increases
 - d) the speed will cause the drag to increase
- 21 The component of the weight which acts along the flight path in a sustained climb is compensated for by
- a) an increase in engine power above that required for level flight at the same speed.
 - b) increasing lift and thrust so that the total is greater than weight.
 - c) reducing engine power below that required for level flight at the same speed to prevent the aeroplane accelerating.
 - d) increasing mainplane lift above that required in level flight.
- 22 Increasing the drag at a constant thrust during a descent will :
- a) reduce the rate of descent.
 - b) not affect the rate of descent.
 - c) increase the rate of descent.
 - d) Decrease speed stability
- 23 If the IAS remains constant, what effect will an increase in power have on the angle and rate of climb
- a) the angle and rate will both increase
 - b) the angle will increase and the rate will decrease
 - c) the angle will decrease and the rate will increase
 - d) the angle will increase and the rate will remain unchanged

- 24 During a climb at maximum power, the IAS is progressively reduced from the maximum rate of climb speed to the stalling speed. The effect on the angle of climb is that it will
- a) increase continually
 - b) decrease then increase
 - c) increase then decrease
 - d) decrease continually
- 25 As altitude increases the excess power available
- a) decreases because the power available decreases and power required is constant
 - b) increases because the power required decreases and power available is constant
 - c) decreases because the power available decreases and power required increases
 - d) remains the same for a given IAS
- 26 The speed at which the best rate of climb occurs is:
- a) the same as the speed for best climb angle
 - b) faster than the speed for best climb angle
 - c) slower than the speed for best climb angle
 - d) the speed for minimum drag

Answers

**1.b 2.d 3.a 4.d 5. c 6.d 7.b 8.b 9. b 10.d 11.b 12.b 13.c
14.b 15.d 16.c 17.a 18.b 19.c 20.a 21.a 22.c 23.a 24.a
25.c 26.b**