LIFT

1. As a general rule, if the angle of attack of an aerofoil is increased, the centre of pressure will

   a) never move.
   b) move forward towards the leading edge.
   c) move towards the tip.
   d) move toward the wing root.

2 If the angle of attack increases from best L/D angle of attack to greater than the stall angle of attack:

   a) the lift and drag will both increase.
   b) the centre of pressure will move aft.
   c) the drag will increase continuously and the centre of pressure moves forwards and then aft.
   d) the lift and drag will increase and the centre of pressure moves forwards.

3 At the critical angle of attack:-

   a) lift suddenly reduces to zero.
   b) the aerofoil is at its maximum coefficient of lift.
   c) the wing is at its most efficient.
   d) lift and drag decrease.

4 A typical aerofoil has maximum lift when:

   a) it is flying at its greatest height.
   b) weight is parallel to lift.
   c) the aircraft is at the stalling angle of attack.
   c) the angle of incidence is sixteen degrees.

5 An aircraft in straight and level flight, when the airspeed increases from the stall to maximum speed:

   a) lift increases with the square of velocity.
   b) total drag decreases then increases
   c) lift increases with the square root of velocity.
   d) induced drag increases.

6 As height increases and the angle of attack and IAS are kept constant:

a) the lift will increase because the TAS increases
b) the lift will increase because the temperature decreases
c) the lift will decrease because the density decreases
d) the lift will remain constant

7 If the angle of attack increases from 0° toward the stalling angle:

a) the lift will increase while the drag will decrease
b) the centre of pressure will move towards the trailing edge of the wing.
c) the drag will decrease and increase and the centre of pressure moves aft and then forward.
d) the lift and drag will both increase and the centre of pressure will move towards the leading edge of the wing.

8 The centre of pressure is the point::

a) on the chord line through which the total reaction is said to act.
b) through which weight acts
c) on the mean camber line through which lift acts
d) through which thrust acts

9 As the angle of attack increases from 4° to the stalling angle:

a) lift increases, drag increases and the centre of pressure moves forwards and then aft
b) lift increases, drag increases and the centre of pressure moves forwards
c) lift increases, drag increases and the centre of pressure moves aft
d) lift and drag decreases and the centre of pressure moves aft.

10 At the critical angle of attack:-

a) lift suddenly reduces to zero.
b) the aerofoil is at its maximum coefficient of lift.
c) the wing is at its most efficient.
d) lift and drag decrease.

11 A typical aerofoil has maximum lift when:

a) it is flying at its greatest height.
b) weight is parallel to lift.
c) the aircraft is at the stalling angle of attack.
d) the angle of incidence is sixteen degrees.

12 Lift is the component of the total reaction that is:-

a) always opposite to weight.
b) perpendicular to the chord line.
c) at right angles to the relative airflow.
d) perpendicular to the longitudinal axis.

13 If the angle of attack and other factors remain constant and the airspeed is doubled, the lift produced at a higher speed will be

a) twice that at the lower speed
b) three times more than that at the lower speed
c) four times more than that at the lower speed
d) increased as the square root of speed

14 Lift on a wing is most properly defined as the

a) differential pressure acting perpendicular to the chord of the wing
b) force produced perpendicular to the relative airflow
c) reduced pressure resulting from a smooth flow of air over a curved surface
d) reaction caused by pressure differential

15 On a wing, the lift force acts perpendicular to and the drag force acts parallel to the

a) chordline
b) longitudinal axis
c) flightpath
d) drag line

16 The primary purpose of wing spoilers is to

a) change the camber or curvature of the wing
b) decrease landing speed
c) decrease the lift of the wing
d) roll control

17 The best measure of wing efficiency is its:

a) critical angle;
b) fineness ratio;
c) Coefficient of Drag;
d) Lift drag ratio.

18 Changing the angle of attack of a wing, enables control of the

a) lift, gross weight and drag
b) lift, airspeed and drag
c) airspeed, weight and drag
d) drag , lift , weight and airspeed

19 The angle of attack of a wing directly controls the

a) amount of airflow above and below the wing
b) point at which the CG is located
c) distribution of high and low pressure acting on the wing
d) amount of airflow above the wing only

20 Changes in the centre of pressure of a wing affect the

a) aerodynamic balance and controllability
b) CG location
c) lift/drag ratio
d) Coefficient of lift

21 Regarding a changing angle of attack, it is true to say that

a) a decrease in angle of attack will increase impact pressure below the wing and decrease drag
b) an increase in angle of attack will decrease impact pressure below the wing and increase drag
c) an increase in angle of attack will increase impact pressure below the wing and increase drag
d) an increase in angle of attack will increase impact pressure below the wing and reduce drag

22 The lift produced by an aerofoil at a given speed :

a) is maximum at approximately 4° angle of attack.
b) is maximum when lift is equal to drag.
c) is maximum at an angle just before the stalling angle.
d) is maximum at the stall.

23 In the Lift formula Cl ½ pV²S, what does the S represent

a) speed
b) total wing area
c) wing loading
d) weight

24 In the Lift formula CL ½ p V² S, what does the CL represent

a) angle of attack, wing area and aerofoil design
b) angle of attack and aerofoil condition
c) angle of attack, aerofoil design and condition
d) aerofoil design

25 At low speeds, for any given angle of attack, a swept wing produces

a) more lift and more drag than a straight wing with the same aspect ratio and thickness/chord ratio
b) less lift and more drag than a straight wing with the same aspect ratio and thickness/chord ratio
c) more lift and less drag than a straight wing with the same aspect ratio and thickness/chord ratio
d) less lift and less drag than a straight wing with the same aspect ratio and thickness/chord ratio

26 In steady state flight, the **sum** of the opposing forces acting on an aircraft is equal to

a) the total weight of the aircraft
b) the total weight of the aircraft plus the total drag
c) zero
d) the thrust plus lift

Answers

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