



Headquarters Air Cadets Examination

528.

Leading Code:
33/2 Principles of Flight
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Serial: 52:

1. Use black or dark blue pen, NOT pencil.
2. Mark one answer per question with a cross.
3. If you wish to change an answer, cancel the original mark and mark another single answer.

A selected answer.

A cancelled answer.

Mark:

Name and Initials _____

Date of Exam _____

Date of Birth _____

Squadron/Unit _____

Wing _____

1 On a general purpose aerofoil, the greatest amount of lift occurs:

- a Just forward of the trailing edge
- b At the centre of the bottom surface
- c Where the top surface is curved the most
- d Where the top surface is not curved

2 Where is the greatest amount of lift normally generated on an aerofoil?

- a Trailing edge
- b Bottom surface
- c Top surface
- d Leading edge

3 If the air density in an airflow is reduced and all other factors are unchanged, what happens to the lift generated by a wing in the airflow?

- a It becomes unpredictable
- b It is unchanged
- c It is reduced
- d It is increased

4 At the stall of a particular wing which one of these factors is NOT variable?

- a The air speed at which it stalls
- b The angle of attack at which it stalls
- c The amount of lift being produced by the wing at the stall
- d The amount of weight supported by the wing

5 The angle of attack at which a wing stalls is known as?

- a Critical angle
- b Stilled angle
- c Crucial angle
- d Stopped angle

6 Each of the three axes of an aircraft pass through the aircraft's:

- a Cockpit
- b Engine bearings
- c Wings
- d Centre of gravity

7 Which axis of rotation on an aircraft generally runs from wing tip to wing tip?

- a Diagonal
- b Longitudinal
- c Normal
- d Lateral

8 A well designed aircraft that is disturbed from level flight (say, by bumpy air) will tend to go back to level flight of its own accord, without the pilot having to make adjustments. This property is called?

- a Stability
- b Instability
- c Damping
- d Inertia

9 Which of these gives an aircraft stability in the yawing plane?

- a Anhedral
- b High centre of gravity
- c Dihedral
- d Sufficient fin area

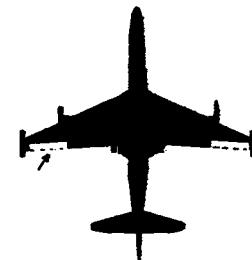
10 This aircraft is flying towards you. What angle is the arrow pointing to ?

- a Cohedral angle
- b Anhedral angle
- c Dihedral angle
- d Lift angle



11 On this diagram what does the arrow point to ?

- a Aileron
- b Fuselage
- c Fin
- d Rudder



12 Aircraft movements such as pitching, rolling and yawing are always described in relation to the?

- a Airflow
- b Pilot
- c Ground
- d Horizon

13 What is the purpose of a slot on an aerofoil?

- a To improve handling at high speed
- b To make the air turbulent at low speeds
- c To reduce the drag at high speeds
- d To improve handling at low speed

- 14 A helicopters rotor disc is?
- a The area swept by the rotor blades
 - b Used to programme the path of the helicopter
 - c Controlled by the yaw pedals
 - d Only used when hovering

15 The lift of a helicopter blade can be increased by?

- a Pointing the nose into wind
- b Slowing the rotor head down
- c Decreasing the pitch angle
- d Increasing the pitch angle

16 Where is the hand throttle of a helicopter located?

- a On the end of the collective lever
- b On the cyclic control
- c On the cockpit wall
- d At the top of the joy stick

17 For a particular aircraft, which of these will reduce the stalling speed?

- a Raising the flaps
- b A reduction in weight
- c Putting the aircraft into a turn
- d A reduction in power

18 Which of these describes the effect of slats at low speeds?

- a Generate extra turbulence in the airflow over the wing
- b Help the pilot to move the control surfaces into the airflow
- c Smooth out turbulence in the airflow over the wing
- d Make it more difficult for the pilot to move the control surfaces into the airflow

19 Lift is obtained from almost all parts of the wing but not equally from every part. About how much is obtained from the top surface of an aircraft wing such as a Chipmunk:

- a Up to 25%
- b Up to 80%
- c Up to 33%
- d Up to 50%

20 If an aircraft in steady straight and level flight suffered a sudden reduction in weight (for example, by jettisoning fuel), and the pilot made no changes to the controls, the aircraft would begin to:

- a Speed up
- b Climb
- c Descend
- d Slow down

21 Which of these statements, about the airflow over the wing of an aircraft just beyond the point of stall is true?

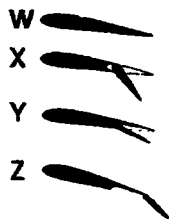
- a It becomes very smooth
- b It speeds up tremendously
- c It becomes turbulent
- d It stops completely

22 A designer needs one shape of wing for the highest possible flying speed-but another for the slowest possible landing speed. What does he provide to enable one wing to achieve both?

- a Balance tabs
- b Trimming tabs
- c Elevators
- d Flaps

23 Which of the following is a split flap?

- a Z
- b Y
- c X
- d W



24 The reaction to the rearward movement of air produced by the propeller or jet is called:

- a Thrust
- b Friction
- c Resistance
- d Drag

25 When a glider pilot operates the airbrakes what is the effect?

- a Lift is reduced and drag is increased
- b Lift is increased and drag is increased
- c Lift is increased and drag is reduced
- d Lift is reduced and drag is reduced