



Headquarters Air Cadets Examination

Staff Cadet

Air Frames

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1. Use black or dark blue pen, NOT pencil.
2. Write only on the answer sheet. Add your personal details.

1 In a transport aircraft, to what approximate altitude is the fuselage pressurised:

- a 4200m (13,500ft)
- b 24m (80ft)
- c 240m (800ft)
- d 2400m (8000ft)

2 Which major airframe unit contains an aircraft's fixed vertical fin:

- a The horizontal stabilizer
- b The canards
- c The tail unit
- d The fuselage

3 When designing an aircraft an increase in weight in one area which leads to other areas being strengthened, and therefore made more heavy, is called the:

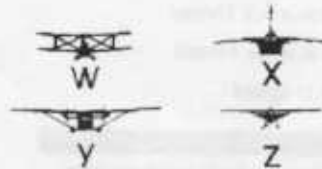
- a Weight spiral deflect
- b Weight increase system
- c Weight spinning effect
- d Weight spiral effect

4 Loads on an airframe increase as the square of the airspeed. Increasing speed from 100 kts to 500 kts increases the air loads by the following amount:

- a Fifty times
- b Five hundred times
- c Twenty five times
- d Five times

5 Which of these aircraft has a wing construction known as cantilever:

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



6 The main construction components of an airframe are ties, struts, beams and webs. A web is a member which is subject purely to:

- a Loads in shear
- b Compression
- c Loads at an angle
- d Tension (pulling)

7 A structure which is strong enough to take the loads applied it both in compression and tension, despite being supported at one end only, its called:

- a Unilever structure
- b Cantilever structure
- c Monolever structure
- d Ortholever structure

8 If the wing of a high-speed aircraft deflects too much, damage and loss of control can be caused by an aerodynamic phenomenon known as:

- a TUTTER
- b MUTTER
- c FLATTER
- d FLUTTER

9 The most important characteristic of materials used in airframe construction is that they have:

- a A low RSW
- b A low SWR
- c A high SWR
- d A high WSR

10 Pure aluminium is often plated onto its alloys to form a protective layer because aluminium:

- a Is very resistant to corrosion
- b Has a very high SWR
- c Is prone to attack by sea-water
- d Can be super-plastically formed

11 At a precise temperature two pieces of titanium pressed together will fuse and become a single piece. This process is called:

- a Diffusion bending
- b Diffusion bonding
- c Fusion bonding
- d Rediflusion blonding

12 Fibres of materials such as glass, carbon or kevlar inside a thermosetting resin such as epoxy are known as:

- a COMPOSTS
- b CAMPSITES
- c COMPOSITES
- d COMPOSITIONS

13 What is the fatigue life, in flying hours, of the BULLDOG aircraft:

- a 5000
- b 45 000
- c 4500
- d 50 000

14 One of the two main components of an aircraft wing is its skin, the other is its:

- a Fabric
- b Internal structure
- c Ribs
- d External structure

15 A BILLET is the name given to a single piece of metal used during the machined skin construction of an aircraft's:

- a WINDSCREEN
- b WING
- c REST AREA
- d UNDERCARRIAGE

16 Foreplanes, or canards, are almost always all-flying, this means that:

- a The entire surface moves to provide control movements
- b They are placed over the main wing sections
- c They are the only surfaces to produce control movements
- d They are always producing lift

17 What is the ideal shape for a cut out in a fuselage:

- a An ellipse
- b A rectangle with rounded corners
- c A circle
- d A rectangle

18 If the engines of a four-engined aircraft are placed far out on the wings and an engine fails, what is the effect of the thrust from the remaining engines:

- a PITCH
- b ROLL
- c CLIMB
- d YAW

19 To ensure that the aircraft tail does not hit the ground on take-off or landing, the main wheels must be:

- a In front of the centre of gravity
- b Behind the centre of gravity
- c Underneath the tail
- d At the centre of gravity

20 What piece of equipment ensures that an undercarriage cannot be retracted accidentally on the ground:

- a Down lock
- b Chock
- c Ground lock
- d A sequencer valve

21 If a control back-up system is manually operated, failure of the primary hydraulic system will cause an immediate:

- a Increase in altitude
- b Decrease in stick forces
- c Increase in stick forces
- d Decrease in speed

22 Control surfaces which combine the functions of elevators and ailerons are called:

- a ELEVONS
- b ELEFLAPS
- c AILERONS
- d RUDDERATORS

23 In order to reduce the risk of fire from hydraulic fluids they are usually:

- a INEBRIATED
- b INHABITED
- c INUNDATED
- d INHIBITED

24 A constant speed drive unit is used to ensure that generators run at a constant speed, regardless of:

- a Engine speed
- b Aircraft Speed
- c Power demands
- d Airspeed

25 What instrument is represented in this diagram

- a VSI
- b Attitude Director
- c ASI
- d Radar Altimeter

