



Headquarters Air Cadets Examination

519
Staff Cadet

33/4 Airframes
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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 What is the main purpose of an aircraft's wings:

- a To support engines
b To carry fuel
c To overcome drag
d To generate lift

2 The main structural link between an aircraft's wings and tail unit is called:

- a The fuselage
b The undercarriage
c The control link
d The ailerons

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 To get the best possible performance an aircraft must be designed to have the minimum possible:

- a Lift
b Drag
c Thrust
d Cross-section area

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

6 If we take the weight of an aircraft and divide it by the wing area, the result is known as its:

- a EFFECTIVE WEIGHT
b WING STRESS
c WING LOADING
d ASPECT RATIO

7 The aerodynamic phenomenon known as FLUTTER is caused when the wings of a high-speed aircraft:

- a Deflect too much
b Are too rigid
c Are too swept-back
d Twist too much

8 When considering an aircraft's wing, the square of its span, divided by its area is known as its:

- a WING LOADING
b ASPIC RATIO
c MEAN CHORD VALVE
d ASPECT RATIO

9 If a metal chosen for airframe construction has the same properties throughout it is said to be:

- a AL-CLAD
b HOMOGENOUS
c AN ALLOY
d HOMOGENIOUS

10 The most widely-used group of airframe construction materials is:

- a Titanium and its alloys
b Plastics and composites
c Pure aluminium and magnesium
d Aluminium and magnesium alloys

11 When iron is alloyed with one of a range of other metals, the result is:

- a MAGNESIUM
b STEEL
c ALUMINIUM
d TITANIUM

12 Diffusion bonding is the process where two pieces of metal, at a precise temperature, will fuse and become a single piece when pressed together. This process is possible with:

- a TITANIUM
b PLASTIC
c ALUMINIUM
d STEEL

13 A material's tendency to break under a high number of relative stresses, such as take-offs and landings, is called:

- a FATIGUE
b FLEXING
c BENDING
d FRACTURE

14 Most modern aircraft have 2 main spars in their wing construction, with stressed skin between them. This type of construction is known as:

- a TENSION BOX
b TENSION BLOCKS
c TORSION BOX
d TORQUE BLOCKS

15 The entire surfaces of foreplanes, or canards, normally move to provide control movements. This is known as:

- a All-moving
b All-lifting
c All-flying
d All-taileron

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

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

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

18 Roll is controlled by:

- a ELEVATORS OR CANARDS
 - b AILERONS
 - c AIRBRAKES
 - d RUDDER
-

19 The big advantage of fly-by-wire systems is that they eliminate the need for:

- a Cables and linkages
 - b Wire connections
 - c Control surfaces
 - d Computers
-

20 Routine flying for long periods on one heading can easily be performed by a mechanical or electronic system called:

- a An autodirector
 - b An autopilot
 - c An autonav
 - d An autoguide
-

21 Autopilot disturbance correctors are called:

- a Salvo-motors
 - b Servo-motors
 - c Service-motors
 - d Serving-motors
-

22 Radar which maps the ground in front of the aircraft is called:

- a Ground-proximity radar
 - b Ground-following radar
 - c Terrain-following radar
 - d Terrain-guidance radar
-

23 De-icing of leading edges, tailplanes and engine intakes is often performed by using:

- a Compressor pump air
 - b Pneumatic bleed air
 - c Compressor bleed air
 - d Conditioning air
-

24 What is the meaning of APU:

- a Auxilliary Power Unit
 - b Auxilliary Pump Unit
 - c Active Pressurisation Unit
 - d Aircraft Power Unit
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25 At high altitudes fuel in aircraft tanks is pressurised to prevent:

- a FREEZING
 - b VENTING
 - c EVAPORATION
 - d BOILING
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