



Headquarters Air Cadets Examination

www.134.org.uk

Staff Cadet

33/4 Airframes

Generated 17-Jul-01

Serial: 401

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

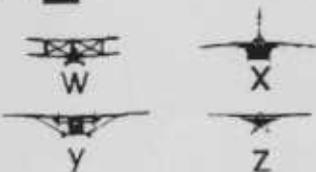
- a 2400m (8000ft)
- b 240m (800ft)
- c 24m (80ft)
- d 4200m (13,500ft)

2 The undercarriage serves two main purposes, one is to absorb landing shocks, the other is:

- a To support the aircraft on the ground
- b To exercise hydraulic systems
- c To provide more lift on final approach
- d To provide aerodynamic braking

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

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



4 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 Loads in shear
- d Compression

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

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

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

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

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

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

8 Steels can be produced with a wide range of properties, ranging from very hard to very ductile. However, they are all very:

- a Brittle
- b Expensive
- c Heavy
- d Corrosive

9 Titanium has only recently become widely available in airframe construction, so it is quite:

- a Heavy
- b Rare
- c Expensive
- d Malleable

10 Aircraft wing ribs often have large lightening holes in them. What is a possible use for these holes:

- a To prevent condensation
- b To allow fuel to flow along the wing
- c To allow the wing to flex more
- d To prevent corrosion

11 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 TORSION BOX
- c TORQUE BLOCKS
- d TENSION BLOCKS

12 Why are aircraft engines placed as close as possible to the aircraft's centreline:

- a To prevent pitch when an engine fails
- b To prevent yaw when an engine fails
- c To prevent roll when an engine fails
- d To reduce fuel weight in the outboard wing sections

13 Where are the engines mounted on a Jetstream aircraft:

- a In the fuselage
- b On the wings
- c At the rear of the fuselage
- d In pods under the wings

14 Which part of an undercarriage system normally has to be disconnected before towing:

- a The nose-wheel steering
- b The oleo nitrogen reservoir
- c The uni-directional torsion link
- d The nose-wheel brakes

15 Where are an aircraft's main wheels often stowed during flight:

- a In the oleos
- b In the tail
- c In the ailerons
- d In the wings

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

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

17 Which plane of movement is controlled by ailerons:

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

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

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

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

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

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

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

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

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

22 For an autopilot to control an aircraft in pitch, roll and yaw axes it requires how many CHANNELS:

- a 1
- b 2
- c 3
- d 4

23 In an auto-pilot the speed at which disturbance correcting servo-motors travel is:

- a The same as the size of the signal they receive
- b Inversely proportional to the size of the signal they receive
- c Proportional to the size of the signal they receive
- d Less than the size of the signal they receive

24 A major disadvantage of pneumatic systems over hydraulic systems is that air is

- a COMPRESSIBLE
- b INVISIBLE
- c REVERSIBLE
- d CONDENSABLE

25 To avoid boiling at high altitude fuel in aircraft tanks is:

- a CIRCULATED
- b PRESSURISED
- c COOLED
- d VENTED