



# Headquarters Air Cadets Examination

www.134.org.uk

Staff Cadet  
33/4 Airframes  
Generated 03-Jul-00  
Serial: 228

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 ☐ 24m (80ft)  
c ☐ 4200m (13,500ft)  
d ☐ 240m (800ft)
- 2 Which major airframe unit contains an aircraft's fixed vertical fin:
- a ☐ The canards  
b ☐ The horizontal stabilizer  
c ☐ The fuselage  
d ☐ The tail unit
- 3 The undercarriage serves two main purposes, one is to support the aircraft on the ground, the other is:
- a ☐ To provide aerodynamic braking  
b ☐ To improve lift on final approach  
c ☐ To absorb landing shocks  
d ☐ To exercise hydraulic systems
- 4 If an aircraft's fuselage is made up of a series of frames, or hoops, what is the name given to the metal strips which run the length of the fuselage, joining the frames:
- a ☐ STINGERS  
b ☐ SKINNERS  
c ☐ STRIPPERS  
d ☐ STRINGERS
- 5 An aircraft's wing loading is found by:
- a ☐ Multiplying its wing area by its aspect ratio  
b ☐ Dividing its wing area by its weight  
c ☐ Multiplying its wing area by its weight  
d ☐ Dividing its weight by the wing area
- 6 The most widely-used group of airframe construction materials is:
- a ☐ Pure aluminium and magnesium  
b ☐ Aluminium and magnesium alloys  
c ☐ Titanium and its alloys  
d ☐ Plastics and composites
- 7 At a precise temperature two pieces of titanium pressed together will fuse and become a single piece. This process is called:
- a ☐ Fusion bonding  
b ☐ Diffusion bending  
c ☐ Diffusion bonding  
d ☐ Rediflusion blonding
- 8 What are fitted to most RAF aircraft to record g loadings:
- a ☐ Mach meters  
b ☐ Monitor meters  
c ☐ Fatigue meters  
d ☐ Stress recorders
- 9 Aircraft wing ribs often have large lightening holes in them. What is a possible use for these holes:
- a ☐ To allow fuel to flow along the wing  
b ☐ To prevent condensation  
c ☐ To prevent corrosion  
d ☐ To allow the wing to flex more
- 10 A multi-spar wing layout is particularly useful in constructing wings for what type of aircraft:
- a ☐ LOW LEVEL  
b ☐ TRAINERS  
c ☐ HIGH SPEED  
d ☐ LOW SPEED
- 11 In a high-flying, pressurised aircraft, the pressure difference between the inside and outside of the aircraft would be:
- a ☐ 5.6kg per square metre  
b ☐ 56000kg per square metre  
c ☐ 56kg per square metre  
d ☐ 5600kg per square metre
- 12 Foreplanes, or canards, are almost always all-flying, this means that:
- a ☐ They are the only surfaces to produce control movements  
b ☐ They are always producing lift  
c ☐ The entire surface moves to provide control movements  
d ☐ They are placed over the main wing sections
- 13 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 ☐ PITCH  
c ☐ ROLL  
d ☐ CLIMB
- 14 What piece of equipment ensures that an undercarriage cannot be retracted accidentally on the ground:
- a ☐ A sequencer valve  
b ☐ Ground lock  
c ☐ Down lock  
d ☐ Chock
- 15 Which plane of movement is controlled by ailerons:
- a ☐ ROLL  
b ☐ CLIMB  
c ☐ YAW  
d ☐ PITCH

16 The control column, or "stick", operates:

- a ☐ ELEVATORS AND RUDDER
- b ☐ RUDDER AND AILERONS
- c ☐ ELEVATORS AND AILERONS
- d ☐ RUDDER AND ELEVATORS

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

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

18 Balance tabs, inset hinges and horn balances are all devices to help the pilot:

- a ☐ Move control surfaces
- b ☐ Warn approaching aircraft
- c ☐ Keep control surfaces central
- d ☐ Fly straight-and-level

19 The device which detects a disturbance in the flight parameters is part of the autopilot system and is called a:

- a ☐ Great gyroscope
- b ☐ Rate gyroscope
- c ☐ Rate magnetron
- d ☐ Rate horoscope

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

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

21 Transmitters close to the runway let the pilot know when his aircraft is on the correct flight path. These signals are fed into the ILS, which stands for:

- a ☐ Instrument Landing System
- b ☐ Interim Landing System
- c ☐ Indicator Lights System
- d ☐ Immediate Landing System

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

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

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

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

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

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

25 At high altitudes fuel in aircraft tanks is pressurised to prevent:

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