



Headquarters Air Cadets Examination

GROUP 1

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 When an aircraft is moving through the air, the resistance to this motion caused by the air is called:

- a Load
- b Resistivity
- c Friction
- d Drag

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

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

11 A multi-spar wing layout is particularly useful in constructing wings for what type of aircraft:

- a HIGH SPEED
- b TRAINERS
- c LOW SPEED
- d LOW LEVEL

2 The undercarriage serves two main purposes, one is to support the aircraft on the ground, the other is:

- a To improve lift on final approach
- b To provide aerodynamic braking
- c To exercise hydraulic systems
- d To absorb landing shocks

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

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

12 In a high-flying, pressurised aircraft, the pressure difference between the inside and outside of the aircraft would be:

- a 56kg per square metre
- b 56000kg per square metre
- c 5600kg per square metre
- d 5.6kg per square metre

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 spiral effect
- c Weight spinning effect
- d Weight increase system

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

- a STEEL
- b ALUMINIUM
- c MAGNESIUM
- d TITANIUM

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

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

4 When an aircraft's speed increases, so does its drag. Drag increases as:

- a The cube of the speed
- b The speed's cube root
- c The square root of the speed
- d The square of the speed

9 What are the two main components of an aircraft's wing

- a Internal structure and skin
- b Fabric and metal
- c Ribs and spars
- d Internal structure and spars

14 Where are the engines mounted on a Jetstream aircraft:

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

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

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

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

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

15 An OLEO PNEUMATIC undercarriage system compresses:

- a Liquid oxygen
- b Oil
- c Air or nitrogen gas
- d Water

16 When brakes overheat they tend to:

- a Break up
- b Fade
- c Dissipate
- d Burn out

17 Which control surfaces are hinged to the fin spar:

- a ELEVATORS
- b AILERONS
- c FIN
- d RUDDER

18 The most common actuator for moving control surfaces is:

- a ELECTRIC
- b MANUAL
- c HYDRAULIC
- d PNEUMATIC

19 Elevons are control surfaces which combine the functions of elevators and:

- a RUDDER
- b AILERONS
- c FLAPS
- d CANARDS

20 If an aircraft's nose pitches down, in what direction will the autopilot move the elevators:

- a One up, one down
- b Centrally
- c Down
- d Up

21 The gyroscope element of an autopilot resists any disturbance by generating a force to oppose it, and this is detected electrically by a:

- a PICK-IT
- b PICK-OFF
- c PICK-ON
- d PICK-UP

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

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

23 Hydraulic fluid is a fire risk because it is a type of:

- a PETROL
- b OIL
- c FUEL
- d GAS

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

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

25 What instrument is represented in this diagram

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

