

- Q.31 Which material is chosen for the turbo plant of an aircraft and why?
  - Q.32 Write in brief about heat treatments of metals and alloys.
  - Q.33 What are the benefits of using composites in aircraft?
  - Q.34 What are the various critical points in iron carbon diagram?
  - Q.35 What are the specifications of Duralumin and its uses?

## **SECTION-D**

**Note: Long answer questions. Attempt any two questions out of three Questions. (2x10=20)**

- Q.36 Explain in detail the heat treatment process for non ferrous alloys?

Q.37 What are the different woods and other non metallic material used in aircraft with their specific application?

Q.38 Explain Pig iron, wrought iron and Neoprene rubber with their applications in aircrafts.

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**4th Sem.**  
**Branch : Aircraft Maintenance**  
**Sub. Aircraft Materials & Material Science-I**

Time : 3 Hrs.

M.M. : 100

## **SECTION-A**

**Note: Multiple choice Questions. All Questions are compulsory. (10x1=10)**

- Q.1 Which of the following can be used to make seats in an aircraft?

  - Magnesium alloy sheets
  - Graphite
  - Rubber
  - Pure magnesium

Q.2 Which of the following is not a composite material?

  - Carbon fiber rod
  - Glass fiber sheet
  - Carbon steel
  - Plywood

Q.3 Pitting of the surface is a kind of aluminium alloy \_\_\_\_\_.

  - Corrosion
  - Annealing
  - Strength
  - Manufacturing method

Q.4 The Tendency of a material to fracture without changing it's shape is known as \_\_\_\_\_.

  - Brittleness
  - Hardness
  - Elasticity
  - Carburizing

- Q.5 Metal heat treatment is done to.
- Remove internal strains
  - To make homogeneous material
  - To make the metals light
  - To improve the properties of materials
- Q.6 Which heat treatment method is used to remove internal stresses?
- |              |                  |
|--------------|------------------|
| a) Tempering | b) Casehardening |
| c) Annealing | d) Normalizing   |
- Q.7 The melting point of aluminium is \_\_\_\_\_.
- |                          |                           |
|--------------------------|---------------------------|
| a) $236^{\circ}\text{C}$ | b) $1085^{\circ}\text{C}$ |
| c) $660^{\circ}\text{C}$ | d) $1510^{\circ}\text{C}$ |
- Q.8 What seal is used in doors of aircraft?
- |                  |                   |
|------------------|-------------------|
| a) Metallic      | b) Silicon rubber |
| c) Cork material | d) Wooden         |
- Q.9 Age of the plant is estimated from?
- Thickness of the stem
  - The circles in the cross section
  - Colour of the internal grain
  - None of the above
- Q.10 Which of the following have high carbon content?
- |                 |                 |
|-----------------|-----------------|
| a) Wrought iron | b) Cast iron    |
| c) Pig iron     | d) Carbon steel |
- Q.12 Where are various glues used?
- Q.13 What is the sealant used in door seals?
- Q.14 Where is natural rubber used?
- Q.15 Where are inconel alloys?
- Q.16 Where are thermosettings?
- Q.17 What is shelf and service life?
- Q.18 Where the tempered materials are used?
- Q.19 What is identification system for ferrous materials?
- Q.20 What is the use of Plywood in aircraft construction?

### SECTION-C

- Note:** Short answer type Questions. Attempt any twelve questions out of fifteen Questions. (12x5=60)
- Q.21 How is the age of a tree determined?
- Q.22 Differentiate thermosetting and thermoplastic materials.
- Q.23 What are the properties and use of pig iron?
- Q.24 What are the properties dominant in choosing a material chosen for tail and wing?
- Q.25 What are the specifications of threads?
- Q.26 What is meant by a stabilizer and b stabilizer in alloying Titanium?
- Q.27 What are the properties dominant in choosing a material chosen for tail and wing?
- Q.28 What is tautening and its use?
- Q.29 Describe Nature made composites, polymer composites and ceramic composites.
- Q.30 Explain Brittleness, Elasticity or Malleability?

### SECTION-B

**Note:** Objective type questions. All questions are compulsory. (10x1=10)

- Q.11 Draw a cross section of wood stem?