

- 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.

No. of Printed Pages : 4  
Roll No. ....

187741/147741

**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?
- Tempering
  - Casehardening
  - Annealing
  - Normalizing
- Q.7 The melting point of aluminium is \_\_\_\_.
- 236<sup>0</sup>c
  - 1085<sup>0</sup>c
  - 660<sup>0</sup>c
  - 1510<sup>0</sup>c
- Q.8 What seal is used in doors of aircraft?
- Metallic
  - Silicon rubber
  - Cork material
  - 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?
- Wrought iron
  - Cast iron
  - Pig iron
  - Carbon steel

### SECTION-B

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

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

(2)

187741/147741

- 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?

(3)

187741/147741