



CBCS SCHEME

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17AE45

Fourth Semester B.E. Degree Examination, June/July 2023

Aircraft Material Science

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. List the various properties of Aircraft materials. Explain any four. (10 Marks)
b. Discuss about different types of testing methods of aircraft materials. (10 Marks)

OR

- 2 a. Brief about the properties and applications of aluminium and titanium alloys. (10 Marks)
b. Discuss about the composition and properties of different types of steels used in aircraft industry. (10 Marks)

Module-2

- 3 a. Give the significance of super alloys in aerospace applications. (08 Marks)
b. Explain Nickel based super alloys with the help of microstructure. (12 Marks)

OR

- 4 a. Explain the need of composites in aircraft structure over conventional materials. (08 Marks)
b. Give the fabrication details of carbon-carbon composites by,
(i) Liquid phase infiltration process.
(ii) Chemical vapour deposition process. (12 Marks)

Module-3

- 5 a. Classify plastic materials. Explain any 4 differences between them. (10 Marks)
b. Discuss about commonly used ceramic materials in aircraft structures. (10 Marks)

OR

- 6 a. Discuss types, properties and applications of glass in aircraft construction. (10 Marks)
b. Explain briefly adhesives and sealants and their uses in aircraft. (10 Marks)

Module-4

- 7 a. Explain the process 'Ablation' and discuss the importance of this process. (08 Marks)
b. Classify aircraft wood and mention any 4 properties of wood. Explain any two. (12 Marks)

OR

- 8 a. Explain the purpose of doping and explain the commonly used dopes. (08 Marks)
b. Give the types of aircraft paints. Explain any four benefits of painting process. (12 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

Module-5

- 9 a. Explain the various methods used for removal of corrosion from aircraft metals. (10 Marks)
- b. Discuss about existing methods employed to prevent corrosion. (10 Marks)

OR

- 10 a. List the materials used for Rockets and Missiles and explain any 4 properties for each category. (12 Marks)
- b. List and explain insulating materials used for cryogenic engines with valid reasons. (08 Marks)
