



CBCS SCHEME

18AE45

Fourth Semester B.E. Degree Examination, June/July 2024 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 and explain desired characteristics of an Aircraft materials. (10 Marks)
b. Discuss various NDT methods used in the material testing. (10 Marks)

OR

- 2 a. Discuss the types of Aluminum Alloys with applications in the Aircraft Industry. (10 Marks)
b. Explain the Production and Manufacturing methods for corrosion resistant and Managing steels. (10 Marks)

Module-2

- 3 a. Discuss briefly about the surface treatment given to super alloys. (10 Marks)
b. Describe briefly about Nickel based super alloys and its microstructures. (10 Marks)

OR

- 4 a. Write the properties and applications of Carbon – Carbon composites. (10 Marks)
b. Write short notes on :
i) Intermetallic Matrix Composites based on polymer
ii) Ablative Composites based on polymer. (10 Marks)

Module-3

- 5 a. Discuss the desirable properties of polymers in the Aerospace application. (10 Marks)
b. Discuss various Shaping and Production methods of polymers. (10 Marks)

OR

- 6 a. Write a note on glass and its shaping methods with neat sketch. (10 Marks)
b. Explain Sealants and Adhesives. List them with applications. (10 Marks)

Module-4

- 7 a. Define Ablation process. What are the different ablative materials and their applications in aerospace? (10 Marks)
b. Describe the classification and properties of wood. (10 Marks)

OR

- 8 a. Describe briefly about aircraft painting process. (10 Marks)
b. What is purpose of painting an aircraft? State the different types of aircraft paints. (10 Marks)

Module-5

- 9 a. List the materials used for rockets and a missiles. Explain the desirable properties. (10 Marks)
b. Describe the following :
i) Uni axial ii) Strip – biaxial iii) Tubular tests. (10 Marks)

OR

- 10 a. Briefly explain the various methods used for removal of corrosion from common Aircraft metals. (10 Marks)
b. Briefly explain about Insulating materials used for Cryogenic engines. (10 Marks)

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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.