



CBCS SCHEME

17AE45

Fourth Semester B.E. Degree Examination, Jan./Feb. 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. Explain the requirements of aircraft material. (08 Marks)
b. Discuss the importance and application of titanium alloy. (12 Marks)

OR

- 2 a. Name some of the factors that are considered in the selection of material for airframes. (08 Marks)
b. Name different types of inspection method. Explain them briefly. (12 Marks)

Module-2

- 3 a. What is super alloy? Discuss briefly Nickel based super alloys. (12 Marks)
b. Discuss the growth of composite usage in aircraft structures. (08 Marks)

OR

- 4 a. Explain different types of heat treatments carried out on super alloy. (12 Marks)
b. Explain the following: i) Metal matrix composites ii) Carbon-carbon composites. (08 Marks)

Module-3

- 5 a. Define adhesives and sealants. Give their applications in aircraft. (12 Marks)
b. Give the typical mechanical and physical properties of aircraft quality glass. (08 Marks)

OR

- 6 a. Write short notes on the following: i) Thermo plastic ii) Thermo setting plastic. (08 Marks)
b. Explain the characteristics and applications of commonly used polymer materials. (12 Marks)

Module-4

- 7 a. Give the aerospace application of ablative material and super conducting material. (12 Marks)
b. Write short notes on the following: i) Seasoning of wood ii) Plywood. (08 Marks)

OR

- 8 a. Name the different types of aircraft points. Explain the purpose of painting. (12 Marks)
b. Explain the following: i) Ablation process ii) Super conducting. (08 Marks)

Module-5

- 9 Explain the following corrosion protection process:
a. Cleaning operation
b. Plating operation. (20 Marks)

OR

- 10 a. List the materials used for rockets and missiles. Explain the desirable properties. (12 Marks)
b. Describe the following: i) Strip – biaxial ii) Tubular test. (08 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.