

--	--	--	--	--	--	--	--	--	--

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. 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. What are Super Alloys? Classify the Super alloys. (04 Marks)
b. Discuss the production methods and applications of Nickel based super alloys in Aerospace Industry. (08 Marks)
c. Explain Iron base Super alloys and its heat treatment processes. (08 Marks)

OR

- 4 a. Define and classify composites. (05 Marks)
b. Explain the following fabrication methods : i) Hand layup ii) Pultrusion. (10 Marks)
c. Discuss Metal Matrix and Ceramics Matrix composite. (05 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. What is Ablation? Discuss the Ablative materials used in the Aerospace Industry. (10 Marks)
b. Explain various Aircraft wood and its seasoning with respect to Aircraft construction. (10 Marks)

OR

- 8 a. Explain various types of rubber used in the Aircraft Industry. (10 Marks)
b. Explain Aircraft painting process and types of paints used. (10 Marks)

Module-5

- 9 a. Define Corrosion and discuss types of corrosion. (10 Marks)
b. Discuss methods used to prevent corrosion. (10 Marks)

OR

- 10 a. Discuss Solid Rocket propellants and its types. (10 Marks)
b. Explain the methods of mechanical characterisation of Solid propellants. (10 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.