CBCS SCHEME

USN ☐☐☐☐☐☐☐☐☐☐   **15AE45**

Fourth Semester B.E. Degree Examination, Feb./Mar. 2022
Aircraft Material Science

Time: 3 hrs.   Max. Marks: 80

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

Module-1

1 a. What are the requirements of aircraft materials? Briefly explain each of them. (08 Marks)
   b. With a neat sketch explain liquid penetrant inspection technique. (08 Marks)

OR

2 a. Write the physical properties and categories of titanium alloys. (08 Marks)
   b. Write the physical properties and give the applications of Maraging steel. (08 Marks)

Module-2

3 a. Define super alloy and write its properties. (08 Marks)
   b. Elaborate about the fabrication processes associated with super alloys. (08 Marks)

OR

4 a. Draw a neat sketch and explain about the pultrusion process. (10 Marks)
   b. What is the role of matrix and interfaces in composites? (06 Marks)

Module-3

5 a. Explain the characteristics and applications of commonly used polymer materials. (10 Marks)
   b. Write the applications of plastics in aircraft. (06 Marks)

OR

6 a. Define adhesives and sealants. Give their application in aircraft. (10 Marks)
   b. Discuss the properties of ceramic materials. (06 Marks)

Module-4

7 a. What are ablative materials? Explain the three groups of ablative materials. (10 Marks)
   b. List the applications of ablative materials in aerospace sectors. (06 Marks)

OR

8 a. Briefly explain the classification of wood. (08 Marks)
   b. Name the different types of aircraft paints. Explain the purpose of painting. (08 Marks)

Module-5

9 a. What is corrosion? Explain how it is affecting the AIC structure. (06 Marks)
   b. Discuss the methods employed to present corrosion. (10 Marks)

OR

10 a. Write down the desirable properties for solid and liquid rocket propellants. (10 Marks)
   b. Describe the following : i) Strip – biaxial test ii) Tubular test. (06 Marks)

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