



# CBCS SCHEME

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17AE45

## Fourth Semester B.E. Degree Examination, Jan./Feb. 2021 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. What are the General properties of materials? Explain the requirement of aircraft material (10 Marks)  
b. Give a reasons for aluminum being so popular in aircraft industry. Mention their application. (10 Marks)

**OR**

- 2 a. Define the following write down their advantages and disadvantages.  
i) Normalizing  
ii) Quenching  
iii) Carburizing  
iv) Case hardening. (10 Marks)  
b. Name different types of inspection method. Explain them briefly, any three. (10 Marks)

### Module-2

- 3 a. What are the Metal Matrix Composites (MMC)? Mention their applications in aircraft and also types. (10 Marks)  
b. What is super alloy? Discuss briefly Nickel based super alloys. (10 Marks)

**OR**

- 4 a. Explain PMC and CMC. Mention their applications in aircraft. (10 Marks)  
b. Describe 3 types of matrices. Discuss the growth of composite usage in aircraft structures. (10 Marks)

### Module-3

- 5 a. Briefly explain the characteristics and typical application of glass and transparent plastic materials. (10 Marks)  
b. Define adhesives and sealants. Give their application in aircraft. (10 Marks)

**OR**

- 6 a. Explain different types of non-Scatterable glass (Types of glass). (10 Marks)  
b. Write a short notes on the following :  
i) Thermoplastic  
ii) Thermosetting plastic. (10 Marks)

### Module-4

- 7 a. Explain the following :  
i) Ablation process with uses  
ii) Super conducting with uses. (10 Marks)  
b. Give the aerospace application of ablative materials and super conducting materials. (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.

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OR

- 8 a. Name the different types of aircraft paints. Explain the purpose of painting. (10 Marks)  
b. Write a short notes on the following :  
i) Seasoning of wood (06 Marks)  
ii) Plywood (04 Marks)  
c. Differentiate between seasoning of wood and plywood.

**Module-5**

- 9 a. Explain the operation of alodizing process. (10 Marks)  
b. Explain the following Corrosion protection process  
i) Cleaning operation  
ii) Plating operations. (10 Marks)

OR

- 10 a. List the materials used for rocket and missile. Explain the desirable properties. (10 Marks)  
b. Describe the following :  
i) Strip biaxial  
ii) Tubular test (10 Marks)

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