

CBCS SCHEME

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21AE32

Third Semester B.E. Degree Examination, Jan./Feb. 2023 Aircraft Materials and Processes

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Classify and explain about aircraft materials in detail. (10 Marks)
b. Draw stress-strain curve for a ductile material and explain in detail. (10 Marks)

OR

- 2 a. Sketch and explain Bauschinger's effect. (06 Marks)
b. Illustrate shear testing of materials and explain. (10 Marks)
c. Write short note on various turing process. (04 Marks)

Module-2

- 3 a. Write about the heat treatment process of aluminium alloys. (10 Marks)
b. Briefly explain the production techniques used for Magnesium alloys. (10 Marks)

OR

- 4 a. Discuss the importance and application of Titanium alloys in aircraft structure. (10 Marks)
b. What is meant by seasoning of wood? Explain different seasoning of woods. (10 Marks)

Module-3

- 5 a. Explain the characteristics and applications of steel alloys. (10 Marks)
b. Write the properties and applications of Maraging steels. (10 Marks)

OR

- 6 a. What are super alloys? Write short notes on Nickel based super alloy. (10 Marks)
b. Describe the classifications of grinding machines. (05 Marks)
c. Discuss the process of directional solidification of super alloys. (05 Marks)

Module-4

- 7 a. Write a short note on properties and applications of ceramic materials. (10 Marks)
b. Discuss the importance and applications of carbon-carbon composites in aircraft. (10 Marks)

OR

- 8 a. Explain in detail about hand layup process with neat diagram. (10 Marks)
b. Differentiate Thermoplastic and Thermosetting. (06 Marks)
c. Write the metal matrix composite applications in aircraft. (04 Marks)

Module-5

- 9 a. What are the different methods employed in removal of corrosion from aircraft metals. (10 Marks)
b. Explain the different hardness testing of materials in detail. (10 Marks)

OR

- 10 Write short notes on the following with neat diagram:
a. Dye-penetrant
b. Magnetic particle technique
c. Ultrasonic technique
d. Eddy current technique. (20 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.