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Fourth Semester B.E. Degree Examination, Feb./Mar.2022 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 General properties of Aircraft materials. (08 Marks)
b. Name different types of testing methods of aircraft material and explain in briefly. (12 Marks)

OR

- 2 a. Explain the following for magnesium alloy casting:
(i) Die casting. (ii) Sand casting. (iii) Investment casting. (12 Marks)
b. Explain briefly the corrosion and heat resistant steels. (08 Marks)

Module-2

- 3 a. Describe briefly about the nickel based super alloys and its micro structure. (12 Marks)
b. Difference between discrete manufacturing and process manufacturing. (08 Marks)

OR

- 4 a. Define ceramic materials. How they are classified? Briefly explain characteristics and application of ceramic materials. (10 Marks)
b. Define composite materials. List out the properties and applications of composite materials. (10 Marks)

Module-3

- 5 a. Explain the property and applications of plastic materials. (10 Marks)
b. Classify polymer material and explain them briefly. (10 Marks)

OR

- 6 a. Explain briefly about adhesives and sealants and their applications in aircraft. (12 Marks)
b. Write the types of non-scatterable glass available and explain them in brief. (08 Marks)

Module-4

- 7 a. Explain ablative materials and its applications in aerospace. (10 Marks)
b. Discuss the typical properties and application of aircraft woods. (10 Marks)

OR

- 8 a. Explain aircraft point process. (08 Marks)
b. List out commonly used dope and explain the purpose of doping. (12 Marks)

Module-5

- 9 a. Explain the corrosion protection method. (08 Marks)
b. Explain briefly about plating operations in corrosion protective treatments. (12 Marks)

OR

- 10 Explain the following:
a. Insulating materials for cryogenic engine.
b. Mechanical characterizations of propellants.
c. Uniaxial testing.
d. Strip biaxial. (20 Marks)

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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.