

CBCS Scheme

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15AE45

Fourth Semester B.E. Degree Examination, Dec.2017/Jan.2018 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. Explain the requirements of aircraft materials. (06 Marks)
b. Discuss the importance and application of titanium alloy. (10 Marks)

OR

- 2 a. Name some of the factors that are considered in the selection of materials for airframes. (06 Marks)
b. Name different types of inspection method. Explain them briefly. (10 Marks)

Module-2

- 3 a. What is super alloy? Discuss briefly Nickel based super alloys. (10 Marks)
b. Discuss the growth of composite usage in aircraft structures. (06 Marks)

OR

- 4 a. Explain different types of heat treatments carried out on super alloy. (10 Marks)
b. Explain the following :
i) Metal matrix composites ii) Carbon - Carbon composites (06 Marks)

Module-3

- 5 a. Define adhesives and sealants. Give their application in aircraft. (10 Marks)
b. Give the typical mechanical and physical properties of aircraft quality glass. (06 Marks)

OR

- 6 a. Write a short note on the following :
i) Thermoplastic ii) Thermo setting plastic (06 Marks)
b. Explain the characteristics and applications of commonly used polymer materials. (10 Marks)

Module-4

- 7 a. Give the aerospace application of ablative material and super conducting material. (10 Marks)
b. Write a short note on the following :
i) Seasoning of wood ii) Plywood (06 Marks)

OR

- 8 a. Name the different types of aircraft paints. Explain the purpose of painting. (10 Marks)
b. Explain the following :
i) Ablation process ii) Super conducting (06 Marks)

Module-5

- 9 Explain the following corrosion protection process
i) Cleaning operations ii) Plating operations. (16 Marks)

OR

- 10 Explain the mechanical characterization of solid propellants using uni-axial and strip - biaxial tests. (16 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.