

CBCS SCHEME

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15AE45

Fourth Semester B.E. Degree Examination, Dec.2018/Jan.2019 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. Name the alloy, which is used for manufacturing majority of fuselage skin, list and explain properties and classification of the same. (10 Marks)
b. Briefly explain the radiography test method performed on aircraft materials. (06 Marks)

OR

- 2 a. Briefly explain the material application and trends in usage in aircraft structures and engines with reasoning for the same. (10 Marks)
b. Write a note on Ti alloys. (06 Marks)

Module-2

- 3 a. Define Powder metallurgy process and briefly explain the steps involved in it, also state the advantages and limitation of the same. (10 Marks)
b. What are super alloys? Write a note on Nickel based super alloys. (06 Marks)

OR

- 4 a. Define composite. How are composites different from alloys? Also list the advantages and disadvantages of composite over conventional alloys. (10 Marks)
b. With neat sketch explain Spray Lay-up process for FRP composite production. (06 Marks)

Module-3

- 5 a. Define plastics. Briefly explain the different categories of the same. Also list the properties and applications of plastics. (10 Marks)
b. With neat sketch explain shatterproof glass and its types. (06 Marks)

OR

- 6 a. What are adhesives and sealants? Briefly explain the advantages and disadvantages of adhesives. (10 Marks)
b. Define ceramic materials. How they are classified? Briefly explain the characteristics of ceramic materials. (06 Marks)

Module-4

- 7 a. What are the purposes of aircraft painting? List and explain different types of aircraft paint? (08 Marks)
b. With a neat sketch explain, different terminology pertaining to aircraft fabrics. Also mention the application of the fabrics. (08 Marks)

OR

- 8 a. What are the purpose of doping? List and explain commonly used dopes. (08 Marks)
b. What is seasoning of wood? Explain the different methods involved in the same. (08 Marks)

Module-5

- 9 a. List and explain the various methods used for the removal of corrosion from common aircraft metal parts. (10 Marks)
- b. What are the propellants? Explain different types of propellants used in rocket engines. (06 Marks)

OR

- 10 a. List and explain different materials used for rockets and missiles application. (08 Marks)
- b. List and explain the desirable properties of solid propellants. (08 Marks)
