

# 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)

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.

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)

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