CBCS SCHEME

USN | | | | | | | | | |

15AE45

Fourth Semester B.E. Degree Examination, June/July 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. Describe about the various methods of testing of aircraft material, explain any two methods in detail. **(08 Marks)**

b. Explain in brief about the application and trends in usage of aircraft materials. **(05 Marks)**

c. Name few Non Destractive Testing (NDT) methods used in aircrafts. **(03 Marks)**

OR

2 a. Explain about corrosion and heat resistant steels with their producibility and surface treatment aspects. **(07 Marks)**

b. Explain in details plain carbon and low carbon steels. **(05 Marks)**

c. Write the advantages and application of Aluminum alloys. **(04 Marks)**

Module-2

3 a. Name and explain the manufacturing process involved in super alloys. **(08 Marks)**

b. Explain the properties of super alloys and their applications. **(08 Marks)**

OR

4 a. Explain in detail about carbon-carbon composites production and their properties and applications. **(08 Marks)**

b. Explain the ablation process and ablative composites based on polymers and ceramic matrix. **(08 Marks)**

Module-3

5 a. Explain the catagories of plastics and characteristics of plastic. **(08 Marks)**

b. Write the classification of polymer materials. **(04 Marks)**

c. Write the application of polymers. **(04 Marks)**

OR

6 a. What are ceramic materials? Write the detailed properties of ceramic materials. **(08 Marks)**

b. Write a brief note on adhesives and sealants. **(04 Marks)**

c. Is glass a ceramic? Justify the answer. **(04 Marks)**

Module-4

7 a. Explain the ablation process. **(04 Marks)**

b. What are ablative materials? Write the application of ablative materials. **(06 Marks)**

c. Write the characteristics of ablative materials. **(06 Marks)**

OR

8 a. Write the classification and properties of aircraft wood. **(06 Marks)**
b. Write the purpose of doping and commonly used dopes. **(04 Marks)**
c. Write the purpose of painting and types of aircraft paints. **(06 Marks)**

Module-5

9 a. Write the different methods used for removal of corrosion from aircraft materials. **(08 Marks)**
b. Write 2 methods employed to prevent corrosion. **(08 Marks)**

OR

10 a. What are high energy materials? Write a note on materials for rockets and missiles. **(06 Marks)**
b. Write a note on insulating materials for cryogenic engines. **(04 Marks)**
c. Write the types of propellants and its general properties. **(06 Marks)**

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