CBCS Scheme

USN ☐☐☐☐☐☐☐☐☐☐   **15AE45**

Fourth Semester B.E. Degree Examination, June/July 2017
Aircraft Material Science

Time: 3 hrs.   Max. Marks: 80

Note: *Answer FIVE full questions, choosing one full question from each module.*

Module-1

1   a.   Define the following : i) Normalizing   ii) Quenching   iii) Carburizing
      iv) Case hardening.   **(04 Marks)**
    b.   Describe how yield point of a material can be determined.   **(06 Marks)**
    c.   Explain the methods that are commonly used to detect minute surface.   **(06 Marks)**

OR

2   a.   Describe IADS with example.   **(08 Marks)**
    b.   Illustrate a 3 – D phase diagram for classification of Ti – alloys.   **(08 Marks)**

Module-2

3   a.   Describe the following : i) Fibre reinforced composites   ii) Laminar composites
      iii) Particulate composites.   **(06 Marks)**
    b.   Why we use PM processing techniques to produce super alloy components?   **(04 Marks)**
    c.   Explain CMM.   **(06 Marks)**

OR

4   a.   Why Metal – Matrix composites?   **(07 Marks)**
    b.   Describe 3 types of matrixes produce 3 common types of composites.   **(09 Marks)**

Module-3

5   a.   Briefly explain the characteristics and typical application of plastic materials.   **(12 Marks)**
    b.   Define Adhesive and Sealant.   **(04 Marks)**

OR

6   a.   Explain different types of non – scatterable glass.   **(08 Marks)**
    b.   Discuss the following : i) Pyralin   ii) Plastecele   iii) Vinylite   iv) Plexiglas and Lucite.   **(08 Marks)**

Module-4

7   a.   Explain the working of Ablator with neat diagram.   **(10 Marks)**
    b.   Why do we need high fidelity models?   **(06 Marks)**

OR

8   a.   List various types of Aircraft wood and describe their properties and applications.   **(08 Marks)**
    b.   Explain the purpose of Doping and commonly used Dopes.   **(08 Marks)**

Module-5

9   a.   Explain the operation of alodizing process.   **(08 Marks)**
    b.   Describe the following : i) Chrome – Pickle treatment   ii) Sealed chrome – Pickle
      treatment.   **(08 Marks)**

OR

10   a.   List the materials used for rockets and missiles. Explain the desirable properties.   **(10 Marks)**
    b.   Describe the following : i) Strip – biaxial   ii) Tubular test.   **(06 Marks)**

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