



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech IV Semester End Examinations (Regular/Supplementary) - July, 2021

Regulation: R18

MATERIALS, TESTING AND EVALUATION

Time: 3 Hours

(CE)

Max Marks: 70

Answer FIVE Questions choosing ONE question from each module
(NOTE: Provision is given to answer TWO questions from any ONE module)

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

MODULE – I

1. (a) Examine high performance concrete and also explain the properties and application. [7M]
(b) Discuss the properties and applications of fibre reinforced concrete. How does bulking of sand affect concrete mix? [7M]
2. (a) Enlist the various types of paints and varnishes and its applications. Explain the uses of paints and varnishes. [7M]
(b) Describe the qualities of good timber briefly. Write about seasoning of timber and illustrate the important qualities of timber. [7M]

MODULE – II

3. (a) Summarize the mechanical characteristics of different materials. Illustrate stress-strain diagram of mild steel, explain strain hardening. [7M]
(b) Describe the plastic deformation and elastic deformation of materials. [7M]
4. (a) List and explain different types of fracture mechanics. Write a brief note on fracture mechanics and its applications. [7M]
(b) Describe the torsion test with the aid of a simple sketch. [7M]

MODULE – III

5. (a) List the different types of metals. Discuss the composition of metallic and composite materials. [7M]
(b) What is fracture toughness in materials? Explain the methodology of fracture toughness test. [7M]
6. (a) Explain briefly about various impact tests to be conducted on metal. [7M]
(b) Explain about ferrous metals and non-ferrous metals with examples. Write the advantages and applications of ferrous and non ferrous metals. [7M]

MODULE – IV

7. (a) List the various tests done on sand. Explain bulking of sand test with a sketch and its significance. [7M]
- (b) Explain the use of bulk density test of fine aggregate. Describe the test conducted to determine the bulk density of fine aggregate. [7M]
8. (a) Enlist different grades of concrete. Explain any one test done on fresh concrete to find out its workability. [7M]
- (b) List different types of bricks used in construction. Briefly explain the testing of bricks to determine its strength. [7M]

MODULE – V

9. (a) What is the composition of fly ash and highlight the use of fly ash in cement? Explain the various tests done on special materials. [7M]
- (b) List the applications of composite materials? Mention the advantages and disadvantages of composite materials. [7M]
10. (a) Explain the mechanical behavior of polymers. Discuss briefly the tests done on polymers. [7M]
- (b) Describe the properties of blast furnace slag cement. What are the advantages and disadvantages of blast furnace slag cement? [7M]

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