

18038 - met - 012



C16-MET-402

6457

BOARD DIPLOMA EXAMINATION, (C-16)

MARCH / APRIL — 2021

DMETE — FOURTH SEMESTER EXAMINATION

MATERIAL TESTING

Time : Three Hours]

[Maximum Marks : 80

PART-A

3×10=30

- Instructions :
- (i) Answer all questions:
  - (ii) Each question carries three marks.
  - (iii) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. Draw the stress-strain curve for a ductile and brittle material.
2. Name the minerals used in Moh's hardness scale.
3. List out the indenters and loads used in Rockwell superficial hardness test.
4. Differentiate between ductile fracture and brittle fracture.
5. Define ductile brittle transition temperature.
6. What are various loading systems in fatigue?
7. State the importance of Creep test.
8. Define non-destructive test.
9. State the principle of eddy current test.
10. State the applications of eddy current test.

## PART-B

- Instructions :
- (i) Answer any five questions
  - (ii) Each question carries ten marks.
  - (iii) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer. 2.5×4

11. Explain the following .
- (a) True stress at maximum load 5+5
  - (b) True fracture stress
  - (c) True uniform strain
  - (d) True local necking strain 8+2
12. Derive the two conditions for necking in tension test. 7
13. Describe the Charpy impact test with a neat sketch. 3
14. (a) Derive an equation to determine Brinell hardness number. 10
- (b) State the applications of Knoop hardness test. 5+5
15. Derive an equation for determining the theoretical cohesive strength of a metal. 8+2
16. Discuss the effect of the following on fatigue properties :
- (a) Surface residual stress 8+2
  - (b) Corrosion on fatigue properties of materials 8+2
17. Explain the creep curve with a neat sketch. 8+2
18. Explain the steps involved in dye penetrant test with neat sketches.

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