

24



C14-MET-403

4485

BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—2016
DMET—FOURTH SEMESTER EXAMINATION
MATERIAL TESTING

Time : 3 hours |

| Total Marks : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed **five** simple sentences.

1. Draw the neat sketch of a stress-strain curve for a mild steel.
2. Define proof stress and resilience.
3. Write the principle of Vickers hardness test.
4. Define fracture and classify fractures.
5. Differentiate between 'notch sensitivity' and 'notch toughness'.
6. Draw the fatigue curve and define fatigue life of a component.
7. What are different types of load used in fatigue testing?
8. Name different parts where creep is observed.
9. Name different non-destructive testing methods.
10. What is the application of dye penetrant test?

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1

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PART—B

10×5=50

- Instructions :** (1) Answer *any five* questions.
(2) Each question carries **ten** marks.
(3) Answers should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. Explain (a) true stress at maximum load (b) true fracture stress, (c) true uniform strain and (d) true local necking strain. $2\frac{1}{2}+2\frac{1}{2}+2\frac{1}{2}+2\frac{1}{2}$
12. Derive the two conditions for necking in tension test. 5+5
13. Describe the Charpy impact test with a neat sketch. 8+2
14. (a) Derive an equation to determine Brinell hardness number. 7
(b) State the applications of Knoop hardness test. 3
15. Derive an equation for determining the theoretical cohesive strength of a metal. 10
16. Discuss the effect of (a) stress concentration and (b) corrosion on fatigue properties of materials. 5+5
17. Explain the creep curve with a neat sketch. 8+2
18. Explain the steps involved in dye penetrant test with neat sketches. 8+2
