



C16-M-401

6446

BOARD DIPLOMA EXAMINATION, (C-16)
MARCH/APRIL—2018
DME—FOURTH SEMESTER EXAMINATION
ENGINEERING MATERIALS

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. What is impact strength of a material? 3
2. Distinguish between crystalline and amorphous solids. 3
3. What is slag? Where is it used? 3
4. Define the following : $1\frac{1}{2}+1\frac{1}{2}=3$
 - (a) Pearlite
 - (b) Cementite
5. What is steel? Distinguish between hypoeutectoid and hypereutectoid steels. $1+2=3$
6. Hardening should never be a final heat treatment for steel. Why? 3
7. List any six methods of heat treatment of steel. 3
8. What is alloy steel? Why are alloying elements added to steel? 3

/6446

1

[Contd...

WWW.MANARESULTS.CO.IN

9. Name three types of aluminium alloy. Give example for each. 1+1+1=3

10. List different methods for compacting the metal powders. 3

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 the Rockwell hardness test and compare B-scale with C-scale. 5+5=10

12. Describe the solidification of pure metal with a neat sketch. 5+5=10

13. Draw a neat sketch of puddling furnace and explain how wrought iron is produced from it. 10

14. (a) Explain cooling curve of pure iron. 4
(b) Define solid solution. Distinguish between substitutional and interstitial solid solutions. 6

15. Name the important heat treatment processes of steel. Explain any two of them with neat sketches. 4+6=10

16. Based on carbon content, how are the plain carbon steels classified? Discuss in detail the uses of these steels. 10

17. (a) Define the following : 2+2+1=5
(i) Hardness
(ii) Toughness
(iii) Ductility

(b) State the properties and uses of lead and magnesium. 2½+2½=5

18. Describe briefly various methods of producing metal powders. 10
