



C09-M-404

3504

**BOARD DIPLOMA EXAMINATION, (C-09)
MARCH/APRIL—2017
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. Write any three differences between destructive test and non-destructive test. 3
2. Define space lattice. 3
3. List out different processes of manufacturing of iron and steel. 3
4. Write a short note on eutectoid steels. 3
5. Define ferrite and pearlite. 3
6. List any three objectives of heat treatment process. 3
7. Write a short note on vacuum hardening. 3
8. Write any three applications of muntz metal. 3
9. Write any three properties of bearing materials. 3
10. Write any three advantages of powder metallurgy. 3

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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 Charpy's impact test conducted on a material with a neat sketch. 5+5
- 12.** Describe BCC, FCC, HCP structures with neat sketches. 4+3+3
- 13.** Explain how pig iron is extracted from blast furnace with a neat sketch. 5+5
- 14.** Draw a neat sketch of iron-carbon equilibrium diagram. Label all the phases and invariant reactions. 5+5
- 15.** List out different heat treatment processes and explain any two of them. 2+4+4
- 16.** Write the compositions, properties and applications of the following : 5+5
- (a) Grey cast iron
- (b) White cast iron
- 17.** (a) List out the mechanical properties of engineering materials and explain any two of them. 5
- (b) Write short notes on brass and bronze. 5
- 18.** Explain the characteristics of metal powders. 10
