



C09-M-404

3504

BOARD DIPLOMA EXAMINATION, (C-09)
APRIL/MAY—2015
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. State any three disadvantages of radiography test. 1×3=3
2. What is the effect of cooling on grain formation? 3
3. What is slag? Where is it used? 2+1
4. What is critical temperature? Write the critical temperatures in cooling of molten iron. 1+2
- * 5. What is thermal equilibrium diagram? 3
6. Define heat treatment. What are the stages in the heat treatment? 1+2
7. Why does hardened steel require tempering? 3
8. What are the effects of combined carbon and free carbon on the properties of cast irons? 1½+1½
9. Write down the properties and uses of zinc. 1½+1½
10. What are meant by blending and briquetting? 1½+1½

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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 criterion for valuation is the content but not the length of the answer.

- 11.** Explain the procedure to be adopted in the impact test. 10
- 12.** How are space lattices mainly classified? Explain any two with neat sketches. 4+6
- 13.** Explain the sequence of operations for the production of steel from iron ore. 10
- 14.** (a) Discuss the significance of equilibrium diagram in the study of the alloy systems. 5
(b) Write short notes on the following : 2½+2½
(i) Ferrite
(ii) Pearlite
- 15.** (a) Explain the following with neat sketches : 3+3
(i) Flame hardening
(ii) Induction hardening
(b) Distinguish between hardening and tempering. 4
- 16.** (a) Explain the effect of carbon on properties of steel. 4
(b) Write down the composition, properties and engineering applications of nickel steel and chromium steel. 3+3
- * **17.** Explain the following processes : 5+5
(a) Rolling
(b) Explosive compacting
- 18.** (a) Write the applications of at least five metals. 5
(b) Give the composition and uses of the following : 2½+2½
(i) Phosphorus bronze
(ii) Gunmetal
