



C09-M-404

3504

BOARD DIPLOMA EXAMINATION, (C-09)

OCT/NOV—2013

DME—FOURTH SEMESTER EXAMINATION

ENGINEERING MATERIALS

Time : 3 hours]

[Total Marks : 80

PART—A

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 the principle of magnaflux testing.
2. What is the effect of recrystallization on properties of cold-worked metal?
3. State the functions of charging materials in blast furnace.
4. What are the critical temperatures? Write the critical temperatures in cooling of molten iron.
5. Distinguish between pearlite and austenite.
6. Define the following terms :
 - (a) Critical rate of cooling
 - (b) Martensite
 - (c) Austenite
7. Define heat treatment. What are the stages of heat treatment?
8. State the composition, properties and applications of nickel steel.

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9. State the composition, properties and uses of admiral brass.
10. List out the sequence of operations involved in powder metallurgy.

PART—B

- 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 Rockwell hardness test. Distinguish B-scale with C-scale.
 12. How are space lattices mainly classified? Explain each with neat sketches.
 13. Explain the L-D process of steel making with a neat sketch.
 14. (a) Explain the allotropic forms of pure iron with a neat sketch.
(b) Describe eutectic, eutectoid and peritectic reactions in iron-carbon diagram.
 15. (a) Explain (i) frame hardening, and (ii) induction hardening with neat sketches.
(b) Distinguish between the hardening and the tempering.
 16. What is nickel? Mention any three nickel alloys and give their compositions, properties and uses.
 17. Explain the following processes :
 - (a) Rolling
 - (b) Explosive compacting
 - (c) Centrifugal compacting
 18. (a) What are the three types of engineering requirement of engineering materials? Briefly explain them.
(b) What is cast iron? Write its composition and any four advantages.

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