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C16–M–401

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BOARD DIPLOMA EXAMINATION, (C–16)

OCT/NOV—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. Distinguish destructive tests from non-destructive tests.

2. Define the terms recrystallisation and grain growth.

3. What are the functions of coke in iron and steel making?

4. Define the following terms:

(a) Eutectic reaction

(b) Eutectoid reaction

5. Define the terms substitutional solid solution and interstitial solid solution

6. Define heat treatment. What are the stages in heat treatment?

7. What is the purpose of annealing? How is it done?

8. What is the difference between cast iron and wrought iron?

9. What are the necessary properties of babbit metal?

10. Define the terms sintering and blending.

PART—B

5×10=50

Instructions : (1) Answer *any* **five** questions.

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

(3) The answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

11. *(a)* Explain the difference between toughness and brittleness.

(b) Discuss the influence of the following elements on the properties of cast iron:

(i) Silicon

(ii) Manganese

12. Write short notes on:

(a) Magnetic particles test

(b) Radiography test

13. Describe the factors promoting grain size of steel. What are the effects of grain size on mechanical properties?

14. Draw the neat sketch of puddling furnace and explain how wrought iron is production from it.

15. Define the following terms:

(a) Ferrite

(b) Cementite

(c) Pearlite

(d) Austenite

16. Discuss the significance of case hardening in engineering practice. Describe nitriding and compare it with carburizing.

17. *(a)* What are the desired properties of bearing metal?

(b) Give the composition and application of the following.

(i) Muntz metal

(ii) Monel metal

18. Describe briefly various methods of producing metal powder.

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