

6446
BOARD DIPLOMA EXAMINATION
JUNE - 2019
DIPLOMA IN MECHANICAL ENGINEERING
ENGINEERING MATERIALS
FOURTH SEMESTER EXAMINATION

Time: 3 Hours

Total Marks: 80

PART - A (3m x 10 = 30m)

Note 1: Answer all questions and each question carries 3 marks

2: Answers should be brief and straight to the point and shall not exceed 5 simple sentences

1. Distinguish Brinell and Rockwell hardness tests with respect to load, indenter and applications?
2. Sketch the crystal structure of H.C.P and give two examples of it?
3. State the advantages of steel making by electric arc process
4. Write the eutectic reaction in Iron carbon equilibrium diagram
5. Calculate the percentage of phases exist in 0.8% carbon in Iron - carbon system.
6. State the purpose of annealing?
7. State the purpose of hardening?
8. State any three properties and uses of magnesium alloys
9. Classify the plain carbon steel in term of carbon existence.
10. Define
 - a) Flowability
 - b) Green strength

PART - B (10m x 5 = 50m)

Note 1: Answer any five questions and each carries 10 marks

2: The answers should be comprehensive and the criteria for valuation is the content but not the length of the answer

11. Explain Rockwell hardness test. Compare the B-scale with C-scale of Rockwell hardness testing?
12. What are the factors promoting the grain size? What is the effect of grain size on mechanical properties?
13. Explain with a neat sketch how pig iron is produced in blast furnace
14. State different allotropic forms of iron and discuss them with the help of cooling curve of pure iron?
15. Explain the Tempering process in detail

16. Name four important bronzes. State the composition, properties and uses of any two of them.

17A. Write the application of the following engineering materials?
a) Steel b) Cast iron

B. Write the composition, properties and uses of chromium steel

18. Explain the isostatic moulding and extruding process

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