

Evening.

D: 24/11/2014

Student Exam No. _____

GANPAT UNIVERSITY

B. Tech. Semester: V (Marine) Engineering

Regular Examination November – December 2014

2MR501 Engineering Material.

Time: 3 Hours

Total Marks: 70

- Instruction:**
- 1 Attempt all Questions.
 - 2 Assume suitable data if necessary.
 - 3 Figure to the right indicates full Marks.
 - 4 Start new Question on New Page.

Section - I

- Que. – 1 (a) Explain thermal equilibrium diagram? 6
(b) Explain T-T-T curve? 6
- OR
- Que. – 1 (a) Explain hardness testing of material 6
(b) What is the purpose of heat treatment? 6
- Que. – 2 (a) Property and application of plastic and rubber? 6
(b) What is the vulcanization rubber? Explain it? 5
- OR
- Que. – 2 (a) Give the different types of heat treatment process? Explain any one 6
(b) What is the Stress concentration? How to failure the material? 5
- Que. – 3 What is the meaning of creep? Describe the meaning of creep Phenomena. What is The creep curve? 12

Section – II

- Que. – 4 (a) What is corrosion? Explain electro thermal corrosion. What are the essential requirements for electro thermal corrosion to occur? 4
(b) What are different methods of controlling the corrosion of a ship? Explain the sacrificial anode system of controlling corrosion. Mention the two names of sacrificial anodes used for steel protection 4
(c) What are the different factors which determine the rate of corrosion? Draw the steel to aluminum connection diagram of plates to prevent corrosion. 4
- OR
- Que. – 4 (a) Explain impressed current system of corrosion protection. What are its advantages? Why reference cell is provided? 4
(b) Mention the methods of preparing surface for applying protective coatings. Write the paint system for superstructure, waterline and below waterline of a ship. 4
(c) State the properties of PTFE (Teflon) and its different uses in various products. 4
- Que. – 5 (a) Which materials are most commonly used for manufacture of Pistons, Piston rings, Liners, Cylinder Covers, Exhaust Valves, and Bed Plate of large slow speed marine engines? 6
(b) State the two most useful properties of Titanium element for its uses in marine application. Which metals are mixed to produce strong light weight alloy metal? Write its marine uses. 5

OR

- Que. - 5 (a) State the two most useful properties of Chromium element. 5
Mention its various uses /Applications.
What are the properties required for selecting materials for propellers. Which materials are used for the manufacture of propellers and rudders of ships? 6
- Que. - 6 (a) Explain different types of stainless steel. 6
(b) Give the advantages and disadvantages and property alloy steel. 6

END OF PAPER

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