

Indian Maritime University
(A Central University, Govt of India)
End Semester Examinations – December 2023
Programme Name: B Tech (NAOE)
Semester: Third
Subject Code: UG12T2304
Subject Name: MARINE MATERIALS

Date: 13.12.2023

Max Marks: 70

Duration: 03 Hrs

Pass Marks: 35

General Instructions

- (i) All Sections (A, B & C) are to be attempted.
- (ii) Options, if any, are specified in respective section.

Section A

Ten MCQs/Fill in the Blanks of 01 Mark each – Choose the correct answer as applicable.

1. The atomic packing factor for BCC structure is _____ .
2. In ICCP, signal from reference electrode is sent to _____ which allows cathodic protection system to adjust to changing conditions.
3. _____ method is used for identification of surface defect by capillary action.
4. _____ is a surface heat treatment process which results in both carbon in case.
5. The structure of ferrite can be FCC or BCC depending on its _____.
6. Mixture of Austenite and Cementite is called as _____.
7. Upon increase in carbon content, strength and hardness of steel will _____.
8. The yield strength of ordinary strength steel is _____ than high strength steel.
9. The composite materials are generally preferred due to _____ weight and high strength.
10. The structure of martensite is _____.

Section B

Five Questions of 02 Marks each

11. Write down the difference between crystalline solid and amorphous solid.
12. Explain the effect of length of fiber, amount of fiber and orientation of fiber on strength of composite material.
13. Write down the difference between iron and cementite.
14. Explain carburising surface heat treatment method.
15. What are the required properties of aluminium alloy in marine applications?

Section C

Seven Questions of 10 Marks each of which any 05 questions to be answered.

16. Explain hypoeutectoid and hypereutectoid steel microstructure with help of iron-iron carbide diagram.
17. Explain the effect of cooling rate on hardness and TTT diagram of eutectoid steel.
18. What is corrosion? Explain factors influencing corrosion.
19. Explain the classification requirement of resins and core for composite materials.
20. Explain different types of crystalline defects.
21. Compare the difference between pack, gas and liquid carburising.
22. Explain the concept of fiber reinforced composite material.