Indian Maritime University

(A Central University, Govt of India)

Supplementary Examinations – MARCH /APRIL 2024

Programme Name: B Tech (ME)

Semester: I

Subject Code: UG11T4104

Subject Name: INDUSTRIAL CHEMISTRY

Date: 22.04.2024	Max Marks: 70
Duration: 03 Hrs	Pass Marks: 35

General Instructions

(i) All Questions in Sections A & B are Compulsory.
(ii) Attempt any 5 Questions in Section-C.

Section A

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

1. Air is a _____

   a) Pure compound.
   b) Mixture of only compounds
   c) Mixture of only elements.
   d) Mixture of both elements and compounds.

2. Waterline corrosion in steel tank is an example of

   (a) Stress corrosion (b) Differential aeration corrosion
   (c) Pitting corrosion (d) Differential metal corrosion

3. Carbonates in water produce _____

   a) Temporary hardness.
   b) Permanent hardness.
   c) Acidity
   d) Alkalinity

4. Corrosion involves _____ reactions.

   a) Oxidation
   b) Reduction
   c) Oxidation and Reduction both
   d) Displacement

5. Select the incorrect statement from the following option.

a) Lubricant reduces the frictional heat.
b) Lubricant acts as a seal and keeps out dirt.
c) Lubricant transmits fluid power.
d) Lubricant enhances corrosion.

6. Which of the following is not a method for disinfection of water?

(a) Chlorination (b) Ozonisation

(c) Electrodialysis (d) UV treatment

7. The process of breaking bigger hydrocarbons into simpler low boiling point fractions is called

a) Reforming
b) Cracking
c) Refining
d) Knocking

8. That some organic compounds which defy oxidation at lower chlorine concentration get oxidized when the ---------- chlorine concentration is reached.

(a) Cloud point (b) Break point

(c) Flash point (d) Fire point

9. Colligative properties depend on _____

a) The nature of the solute particles dissolved in solution.
b) The number of solute particles in solution.
c) The physical properties of the solute particles dissolved in solution.
d) The nature of solvent particles.

10. The protection of ship hull from marine corrosion by using Aluminum blocks is an example of:

(a) Passivation (b) Impressed current protection

(c) Sacrificial cathodic protection (d) Sacrificial anodic protection

Section B

(Five Questions of 02 Marks each)

11. Distinguish between scale and sludge.

12. Define gross calorific value and net calorific value.

13. What is meant by desalination and list the methods employed for desalination?

14. What is corrosion? Also write the effects of corrosion.

15. Define saturated solution and suspension

Section C

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

16. a. Explain elevation of boiling point and depression of freezing point and how Van't Hoff factor affects the boiling point of a strong electrolyte solution. (6 marks)

b. Explain phenomenon of Reverse Osmosis and its applications.(4 marks)

17. a. Write a short note on desalination and Discuss Electrodialysis method in detail. (5 Marks)

b. Explain the ion exchange process for the purification of water with a neat diagram. (5 Marks)

18. a,Define boiler feed water. What are the properties and essential requirements of boiler feed water? (5 Marks)

(b) What is potable water and treatment process for removal of impurities? (5 Marks)

19. a. Explain the mechanism of Dry and Wet Corrosion (5 Marks)

b. Write Short notes on i) Pitting corrosion
ii) Crevice Corrosion (5 Marks)

20. a. Discuss the various methods of controlling the corrosion. (5 Marks)

b.Write a short note on corrosion inhibitors. Explain their functions (5 Marks)

21. a. Define what is natural gas, LPG, Producer gas and water gas composed of. (5 Marks)

(a) What is flammability, upper flammable limit, and lower flammable limit. (5 Marks)

22.a. Define the following a. Flash & Fire Point b. Cloud & Pour Point

(4 Marks)

b. Define the term Viscosity ? Explain the determination of kinematic viscosity using Redwood viscometer? (6 Marks)