

**PARVATIBAI CHOWGULE COLLEGE OF ARTS AND SCIENCE
(AUTONOMOUS)**

B. Sc. Semester End Examination, January/February, 2022

Semester: III

Subject: Chemistry

Title: Introduction to Industrial Chemistry (Elective)

Duration: 2.0 Hours

Maximum Marks: 45

Instructions: 1. All questions are compulsory.

2. Figures to the right indicate full marks.

Q. 1. Answer **ANY THREE** from the following.

- i. Differentiate between stress and strain. What happens to the ductility and hardness of a material with increase in temperature? (3)
- ii. Illustrate with diagram, what will happen when metal reacts with oxygen to form (a) Unstable oxide layer (b) Volatile oxide layer (c) Porous oxide layer? (3)
- iii. Explain the adsorption process involved in sewage treatment. (3)
- iv. What are trickling filters? Give the advantages of trickling filters. (3)

Q. 2. Answer **ANY TWO** from the following.

- A. i. With the help of a suitable labelled diagram, explain the mechanism of oxidation corrosion. (3)
- ii. Explain how corrosion can be prevented based on external influence. (3)
- B. i. With the help of a suitable labelled diagram, explain how tank furnace can be used for melting in the manufacturing process of glass. (3)
- ii. Explain: Pitting Corrosion. (3)
- C. i. Explain the following terms: (a) Distempers (b) Plasticizers (3)
- ii. Explain: Classification of paints based on their application. (3)

Q. 3. Answer **ANY TWO** from the following.

- A. i. With the help of suitable diagram, explain the effect of temperature in the manufacture of ammonia. (3)
- ii. What is halogenation? How chloroethane be manufactured using the mechanism of free radical halogenation of alkanes? (3)
- B. i. Using suitable mechanism, explain how benzene can be converted into nitrobenzene using suitable reagent. (3)
- ii. Explain: Classification of boilers according to location of furnace and relative position of water and hot gases. (3)
- C. i. What are heat exchangers? Explain the storage type heat exchangers. (3)
- ii. State the role of a catalyst in the manufacture of ammonia. (3)

Q. 4. Answer **ANY ONE** from the following.

- A. i. Explain the anaerobic process of wastewater treatment. What are the objectives of the sedimentation process in the wastewater treatment? (5)
- ii. What are the safety measures that are to be taken while working in a laboratory? (4)
- iii. Explain: Electroplating process of metals. (3)
- B. i. What are wet scrubbers? Explain the working principle and types of wet scrubbers. (5)
- ii. Explain the fire safety equipment's used for protection against fire and explosions. (4)
- iii. What is Hull cell? Explain how hull cell is used in plating. (3)
