

Seat No. \_\_\_\_\_

Enrolment No. \_\_\_\_\_

**THE CHARUTAR VIDYA MANDAL UNIVERSITY**  
**Master of Science (Surface Coating Technology) - SEMESTER 4**  
**April 2023 (Regular) EXAMINATION**

**Course Title: COATING APPLICATION & SPECIALTY COATINGS**

**Course Code: 101470401**

**Total Printed Pages : 02**

**Date: 18/04/2023**

**Time: 10:00 am to 12:00 noon**

**Maximum Marks: 60**

**Instructions:**

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

**Q. 1 Answer the following multiple choice questions. (04)**

1 "Roto Dip" is associated with?

- (a) Curtain Coating                      (b) Coil Coating  
(c) Dip Application                      (d) Electro static Application

2 Pigment wetting by binder is facilitated when the contact angle is?

- (a) 0° (b) 45° (c) 90° (d) 180°

3 Which of these factors affect Tg of the polymer weight?

- (a) Molecular weight (B) Crosslinking (c) Crystallinity (D) All of these

4 Which metal will not be used as Sacrificial Coatings?

- (a) Al (b) Na (c) Mg (d) Zn

**Q.2 Answer in brief and to the Point (4 questions of 2 marks each) (08)**

1 Advantages And Disadvantages of Electro coating.

2 Write the functions of "trigger" in spray application.

3 Write about 'Final Rinses' in metal pre-treatment

4 Draw limits of movement of 'Robot Painter'.

**Q.3 a What is dip application? Explain with diagram. What are the requirements of paint for dipping? (06)**

**b What is the principle involved in conventional spray application? (06)**  
Explain in details conventional spray application with diagram showing main parts of it.

**OR**

**b Give brief account of curtain coatings. Explain in details Vacuum & Pneumatic coaters. Which method uses to strip off excess coatings by vacuum coaters? (06)**

**Q.4 a** Give details about adhesion to plastics with various techniques. Write various methods to evaluate adhesion to the plastics. (06)

**b** Give brief on account of coil coatings. What are the requirements of paint for coil coatings? List various polymer systems uses for the coating in coil coating industry. (06)

**OR**

**b** Why metal cleaning required? Write in details Mechanical method, Solvent degreasing and alkaline cleaners for metal surface preparation. (06)

**Q.5 a** Give the brief account of Zinc Phosphate, Manganese Phosphate, and Chromium Phosphate with chemical reactions as conversion coatings. (06)

**b** Write principles of Anodic Electro coatings with diagram. What is cationic Electrodeposition? Explain. (06)

**OR**

**b** What is a water reducible resin? Give important properties of water with water borne coatings. Write important properties of water reducible resins. (06)

**Q.6 a** What is smart coating? Give attractive features of smart coatings application. (06)

**b** Write in detail about covalent bonding to Glass by giving suitable example of silanol group. (06)

**OR**

**b** Discuss manufacturing process of Powder Coatings in details. Explain various raw materials required for powder coatings. (06)

\*\*\*\*\*



- (b) Write a note on indirect losses due to corrosion. (06)
- OR**
- (b) Write a note on Dry corrosion. (06)
- Q.4** (a) Describe in detail causes of pitting corrosion, its mechanism and how one can prevent it. (06)
- (b) Explain Crevice corrosion in detail. (06)
- OR**
- (b) Write a note on Uniform corrosion. (06)
- Q.5** (a) Explain Salt Spray test method to evaluate corrosion resistance. (06)
- (b) What are corrosion inhibitors? How do they function? (06)
- OR**
- (b) Write short note on corrosion control by impressed current method. (06)
- Q.6** (a) Write a note on Inorganic Zinc Silicate Primer. (06)
- (b) Explain in detail different types of anti-corrosive pigments. (06)
- OR**
- (b) Write a note on types of Antifouling paint. (06)

\*\*\*\*\*

**THE CHARUTAR VIDYA MANDAL UNIVERSITY**  
**Master of Science (Surface Coating Technology) - SEMESTER 4**  
**April 2023 (Regular) EXAMINATION**

**Course Title: Technology of Construction Chemicals**

**Course Code: 101470403**

**Total Printed Pages : 02**

**Date: 24/04/2023**

**Time: 10:00 am to 12:00 noon**

**Maximum Marks: 60**

**Instructions:**

- Attempt all questions.
- Numbers to the right indicate full marks for each question.
- Make suitable assumptions wherever necessary.

**Q. 1 Answer the following multiple choice questions. (04)**

- 1 Which of the following ratio is also known as water-cement ratio?
  - a) Weight of water to the weight of aggregates
  - b) Density of cement to the Density of cement
  - c) Weight of water to the weight of cement
  - d) Volume of cement to the volume of cement
- 2 Adhesion on Concrete is being done by \_\_\_\_\_ test.
  - a) Dolly
  - b) Peel
  - c) Crosshatch
  - d) Scratch
- 3 Crack bridging test according to EN 14891 is performed at \_\_\_\_\_.
  - a) @ +23°C, @ -5°C and @ -20°C
  - b) @ +23°C, @ +5°C and @ -20°C
  - c) @ -23°C, @ -5°C and @ -20°C
  - d) @ -23°C, @ -5°C and @ +20°C
- 4 \_\_\_\_\_ polymer binders provide waterproofing membrane with adhesion and flexibility
  - a) EVA b) Polypropylene c) Polystyrene d) Alkyd

**Q.2 Answer in brief and to the Point (4 questions of 2 marks each) (08)**

- 1 What are different types of admixtures used in concrete?
- 2 What does Slump means in Construction Industry?
- 3 Write the full name and structure of EPDM.
- 4 What is Bitumen Emulsion? What are the two main types of Bitumen emulsion?

- Q.3 a** What is the difference between White Cement and Ordinary Cement? (06)  
**b** Write the structure of SNF, SMF, Vinyl Copolymers and PCE use for superplastizer. (06)

OR

- b** Which are the better grades: OPC 43 and OPC 53? Explain (06)

- Q.4 a** What is Superplasticizer? What are the advantages and disadvantages of Superplasticizer in Concrete? (06)

- b** Discuss about Viscosity Modifying Admixtures (VMA'S) (06)

OR

- b** What is Water ingress? List the causes of water ingress? (06)

- Q.5a** List the different waterproofing method. Explain the Cementitious' Water-proofing methods along with formulations (06)

- b** Write the key differences between Damp proofing and Waterproofing. (06)

OR

- b** What is PU injection grouting? (06)

- Q.6 a** What is Industrial Floor? Explain the different types of Industrial Flooring (06)

- b** What is Bonding Agent and why it is necessary? (06)

OR

- b** Differentiate Adhesives vs Sealants (06)

\*\*\*\*\*



- Q.5** (a) How one can reduce equipment cleaning waste in paint manufacturing industries? (06)
- (b) Explain in detail best operating practices to reduce waste in paint manufacturing industries. (06)

**OR**

- (b) Write a note on Carbon foot print. (06)

- Q.6** (a) Define EMS according to ISO 14001 standards and write benefits of ISO 14001 certification. (06)

- (b) Write a note on component of EMS. (06)

**OR**

- (b) Write a note on drivers of EMS. (06)

\*\*\*\*\*