| Seat No |), | Enrolment No | |
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| | THE CHARUTAR VID | /A MANDAL UNIV | ERSITY |
| Course | e Title: COATING APPLICATION 8 | SPECIALTY COATINGS | |
| Course | e Code: 101470401 | | |
| Total | Printed Pages: 02 | | |
| Date: 1 | 18/04/2023 Time: 10:00 | am to 12:00 noon | Maximum Marks: 60 |
| • 1 | ions: Attempt all questions. Numbers to the right indicate full mark Make suitable assumptions wherever ne | | |
| Q. 1 | Answer the following multiple choi | ce questions. | (04) |
| 1 | "Roto Dip" is associated with? | | |
| | (a) Curtain Coating (b) (| Coil Coating | |
| | (c) Dip Application (d) I | Electro static Application | ı |
| 2 | Pigment wetting by binder is facili | tated when the contact a | angel is? |
| | (a) 0° (b) 45° (c) 90° (d) 180° | • | |
| 3 | Which of these factors affect Tg of | the polymer weight? | · |
| | (a) Molecular weight (B) Crosslinkii | ng (c) Crystallinity (D) A | ll of these |
| 4 | Which metal will not be used as Sa | crificial Coatings? | |
| | (a) Al (b) Na (c) Mg (d) Zn | | |
| Q.2 | Answer in brief and to the Point (4 | questions of 2 marks ead | ch) (08) |
| 1 | Advantages And Disadvantages of E | lectro 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 (06) of paint for dipping?
 - 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 & (06)

Pneumatic coaters. Which method uses to strip off excess coatings by vacuum coaters?

Q.4 a Give details about adhesion to plastics with various techniques. Write various methods to evaluate adhesion to the plastics. b Give brief on account of coil coatings. What are the requirements of (06)paint for coil coatings? List various polymer systems uses for the coating in coil coating industry. OR (06)**b** Why metal cleaning required? Write in details Mechanical method, Solvent degreasing and alkaline cleaners for metal surface preparation. Q.5 a Give the brief account of Zinc Phosphate, Manganese Phosphate, and (06)Chromium Phosphate with chemical reactions as conversion coatings. b Write principles of Anodic Electro coatings with diagram. What is cationic (06)Electrodepostion? Explain. OR **b** What is a water reducible resin? Give important properties of water with (06)water borne coatings. Write important properties of water reducible resins. Q.6 a What is smart coating? Give attractive features of smart coatings (06)application. b Write in detail about covalent bonding to Glass by giving suitable (06)example of silanol group. OR

b Discuss manufacturing process of Powder Coatings in details. Explain (06)

various raw materials required for powder coatings.

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THE CHARUTAR VIDYA MANDAL UNIVERSITY M.Sc. SURFACE COATING TECHNOOGY – SEMESTER 4 APRIL 2023 (REGULAR) EXAMINATION

Course Title: Corrosion Technology & Heavy Duty Protective Coatings. Course Code: 101470402 **Total Printed Pages: 02** Date: 20/04/2023 Time: 10.00 am to 12.00 pm 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)(I) Corrosion is a process reverse of of a metal. a. destruction b. extraction c. rusting d. galvanizing (II)units are used in terms of penetration of pits on a metal? a MDD b. MPY c. Both MDD and MPY d. Neither MDD nor MPY (III) In electrochemical corrosion, the metal undergoing corrosion a. act as anode b. act as cathode c. undergoes reduction d. none of these (IV) Zn gives corrosion protection by a. sacrificial mechanism b. barrier effect c. inhibitive effect d. none 0.2 Answer in brief and to the Point (4 questions of 2 marks each) (08)(I) Define corrosion. Write about the fundamental reasons on occurrence of corrosion. (II)What is meant by term passivity? (III) What is Mill Scale? Why it must remove before coatings application? (IV) What are inhibitive primers? **Q.3** (a) Write about consequence of corrosion and explain the factors which (06) influence the rate of corrosion?

| | (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 | (06) |
| | | can prevent it. | |
| | (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) |

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THE CHARUTAR VIDYA MANDAL UNIVERSITY

Master of Science (Surface Coating Technology) - SEMESTER 4
April 2023 (Regular) EXAMINATION

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|---------|--|------------|--|----------------|------|--|
| Course | e Title: Technolo | ogy of C | onstruction Chemicals | | | |
| Course | e Code: 1014704 | 103 | | | | |
| Total | Printed Pages: | 02 | | | | |
| Date: 2 | Date: 24/04/2023 Time: 10:00 am to 12:00 noon Maximum Marks: | | | | | |
| • 1 | Attempt all guestions. | ndicate fo | ull marks for each question. rever necessary. | | | |
| Q. 1 | Answer the following | ng multij | ole choice questions. | | (04) | |
| 1 | Which of the follow | ing ratio | o is also known as water-cement | t ratio? | | |
| | a) Weight of water | to the w | veight of aggregates | | | |
| | b) Density of ceme | nt to the | e Density of cement | | | |
| | c) Weight of water | to the w | veight of cement | | | |
| | d) Volume of ceme | nt to the | e volume of cement | | | |
| 2 | Adhesion on Concre | ete is be | ing done by test. | | | |
| | a) Dolly | | | | | |
| | b) Peel | | | | | |
| | c) Crosshatch | | | | | |
| | d) Scratch | | | | | |
| 3 | Crack bridging test | accordi | ng 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 @ -2 | 20°C | | | |
| | d) @ -23°C, @ -5°C | and @ + | 20°C | | | |
| 4 | polymer bin | ders pro | vide waterproofing membrane v | vith adhesion | | |
| | and flexibility | | | | | |
| | a) EVA b) Polypro | pylene | c) Polystyrene d) Alkyd | | | |
| Q.2 | Answer in brief an | d to the | Point (4 questions of 2 marks ea | ach) | (80) | |
| 1 | What are different | types o | f admixtures used in concrete? | | | |
| 2 | What does Slump r | neans in | Construction Industry? | | | |
| 3 | Write the full nam | e and st | ructure of EPDM. | | | |
| 4 | What is Bitumen | Emulsio | n? What are the two main ty | pes 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 | (06) |
| | superplastizer. | |
| | 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 | (06) |
| | Superplasticizer in Concrete? | |
| 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' | (06) |
| | Water-proofing methods along with formulations | |
| Ь | 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) |
| ь | What is Bonding Agent and why it is necessary? | (06) |
| | OR | |
| Ь | Differentiate Adhesives vs Sealants | (06) |

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THE CHARUTAR VIDYA MANDAL UNIVERSITY M.Sc. SURFACE COATING TECHNOOGY – SEMESTER 4 APRIL 2023 (REGULAR) EXAMINATION

Course Title: Environmental Management

Course Code: 101470407 **Total Printed Pages: 02** Date: 26/04/2023 Time: 10.00 am to 12.00 pm Maximum Marks: 60 Instructions: Attempt all questions. Numbers to the right indicate full marks for each question. Make suitable assumptions wherever necessary. Answer the following multiple-choice questions. (04)Q. 1 Which of the following is NOT the principle of green chemistry? **(I)** a. Maximizing atom economy b. Increasing by-products c. Designing degradable chemical products d. Using catalysts Which of the following reaction consider as 100 % atom economical? (II) a. Addition b. Substitution c. Elimination d. None of these is an aerobic method of decomposing organic solid wastes. (III) d. None of the above a. Landfilling b. Composting c. Incineration ISO stands for (IV) a. International Organization for Standardization b. Indian Standard Organization c. Indian Specification Organization d. None of the above Answer in brief and to the Point (4 questions of 2 marks each) (08)Q.2 Explain atom economy and percentage yield with example. **(I)** Define air pollution and enlist major air pollutants. (II) Explain why "Waste reuse and recycling are the preferred options" when (III) managing solid waste. Lists the problems associated with ISO 14001 certification. (IV) Why should chemist pursue the goals of Green Chemistry? (06)Q.3 (a) Write a note on Green Solvent. (06)(b) OR Explain in detail real-time, in-process analysis beneficial to green chemistry. (06)(b) Write a note on thermal methods for solid waste management. (06)Q.4 (a) What are BOD and COD? How it is determined? (06)(b)

What is air pollution? Write its causes and prevention method.

(b)

(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) | | |
| | | | | | |
