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ANNA UNIVERSITY (UNIVERSITY DEPARTMENTS)

B.E. / B. Tech / B. Arch (Full Time) - END SEMESTER EXAMINATIONS, APR/MAY 2024

CIVIL ENGINEERING  
II Semester (Arrear)  
CY7253 Chemistry for Civil Engineering

(Regulation 2015)

Time: 3 hrs

Max. Marks: 100

**PART - A (10 x 2 = 20 Marks)**

(Answer all Questions)

Q. No	Questions	Marks
1	What is plaster of paris? Write any two of its uses.	2
2	How is bullet resistant laminated glass prepared?	2
3	Write any four objectives of electroplating on metals.	2
4	Define pitting corrosion.	2
5	How is adhesive strength developed by the loss of solvent?	2
6	What are particulate composites? Give an example.	2
7	Write a note on abrasives. How are they classified?	2
8	Define thermal spalling as applied to refractories.	2
9	What is hardness of water? Mention any two units for the expression of hardness in water.	2
10	How is sodium aluminate used as a chemical coagulant in municipal water treatment? Give the required equations.	2

**PART - B (5 x 13 = 65 Marks)**

(Restrict to a maximum of 2 subdivisions)

Q. No	Questions	Marks
11 (a) (i)	Explain the chemical reactions involved in the setting and hardening of Portland cement.	7
(ii)	Discuss the steps involved in the manufacture of glass.	6
(OR)		
11 (b) (i)	What are whitewares? Explain the steps involved in the manufacture of white-pottery.	7
(ii)	Discuss the composition, properties and uses of borosilicate glass.	6
12 (a) (i)	Explain how corrosion can be controlled by proper designing.	7
(ii)	Distinguish between galvanizing and tinning.	6
(OR)		
12 (b) (i)	Describe the mechanism of electrochemical corrosion by oxygen absorption.	7
(ii)	Discuss the impressed current method of cathodic protection.	6
13 (a) (i)	Discuss the various chemical factors influencing adhesive action.	7
(ii)	Write a short note on phenol-formaldehyde and urea-formaldehyde resins as adhesives.	6
(OR)		
13 (b) (i)	Discuss the properties and application of glass fiber-reinforced, carbon fiber-reinforced and aramid fiber-reinforced composites.	7

(ii)	Explain how surface tension and porosity have a marked influence on the bond strength developed by an adhesive.	6
14 (a) (i)	Write a short note on the measurement of refractoriness using pyrometric cone test.	7
(ii)	Discuss the preparation, properties and uses of silica bricks.	6
(OR)		
14 (b) (i)	Explain the steps involved in the manufacture of refractories.	7
(ii)	What do you understand by refractoriness under load (RUL) and dimensional stability in relation to refractories.	6
15 (a) (i)	Discuss the application of ion-exchange resins in water-softening. How are spent resins regenerated?	7
(ii)	Give an account of the water quality physical parameters. Explain their significance.	6
(OR)		
15 (b) (i)	What is reverse osmosis? How is sea water purified using this technique?	7
(ii)	What is filtration? Discuss the operation of a sand filter.	6

**PART- C (1 x 15 = 15 Marks)**  
(Q.No. 16 is Compulsory)

Q. No	Questions	Marks
16 (i)	Discuss how sterilization of water is carried out using chlorine.	8
(ii)	Explain sacrificial anodic protection method of controlling corrosion.	7

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