KUMARAGURU
college of technology
character is life

Register Number: ……..

B.E DEGREE EXAMINATIONS: DEC 2014

(Regulation 2009)

Second Semester

CIVIL ENGINEERING

CHY102: Chemistry for Civil Engineering

Time: Three Hours **Maximum Marks: 100**

Answer all the Questions:-

PART A (10 x 1 = 10 Marks)

1. Molecular formula of calgon is

   a) $Na_4[Na_2(PO_3)_6]$ b) $Na_2[Ca_2(PO_3)_6]$

   c) $Na_2[Na_4(PO_3)_6]$ d) $Ca[Na_4(PO_3)_6]$

2. Choose a method to remove micro organisms from water

   a) EDTA method b) Demineralization

   c) Zeolite process d) Sterilization

3. The corrosion layer formed by MoO_3 is

   a) Unstable layer b) Volatile layer

   c) Stable layer d) Porous layer

4. A metal which could provide cathodic protection to iron is

   a) Copper b) Aluminium

   c) Nickel d) Silver

5. The constituent of lime which imparts hydraulic property is

   a) Clayey matter b) Silica

   c) Alumina d) Alkalis

6. Predict from the below which is not a drying oil

   a) Soya bean oil b) Dehydrated castor oil

   c) Camphor oil d) Linseed oil

7. Whiskers are thin strong fibers of

a) Graphite b) Polymer

c) Metal d) Ceramic

8. Electrical insulators are made by

a) Polyurethane b) Polyamide

c) Polycarbonate d) Polyethylene terephthalate

9. Moh's Scale for diamond is

a) 9 b) 4

c) 7 d) 10

10. Cup greases are

a) Lithium based greases b) Calcium based greases

c) Soda based greases d) Axle greases

PART B (10 x 2 = 20 Marks)

11. Define break point chlorination.
12. All the three alkalinities cannot be present simultaneously in a water sample. Give reason.
13. State pilling-Bedworth rule. What is its importance?
14. Identify with which ion magnesium corrodes faster, if it is in contact with copper or when it is in contact with iron? Justify your answer.
15. Name any two water proofing agents added to make water proof cements.
16. Write short note on luminous paints.
17. What are the constituents of composites? Give example.
18. State any two uses of thermocole.
19. What is meant by PCE of a refractory?
20. How are greases made?

PART C (5 x 14 = 70 Marks)

21. a) (i) Discuss the ion exchange process for water softening. (8)

(ii) Distinguish between scales and sludges. (6)

(OR)

b) (i) Explain the EDTA method for the estimation of hardness of water. (8)

		(ii)	Describe the reverse osmosis method for desalination of water.	(6)
22.	a)	(i)	Explain in detail the mechanism of electrochemical corrosion.	(7)
		(ii)	List out the factors which affect rate of corrosion.	(7)
			(OR)	
	b)	(i)	Outline a brief note on cathodic protection methods.	(7)
		(ii)	What are the main objectives of electroplating? Account on electroplating of copper.	(7)
23.	a)	(i)	Describe with a neat diagram how Portland cement is manufactured. Explain the chemical reactions involved in the process.	10
		(ii)	List out the uses of varnishes and lacquers.	(4)
			(OR)	
	b)	(i)	What are paints? Give their constituents and functions.	10
		(ii)	Compare Dry and wet process in the manufacture of Portland cement.	(4)
24.	a)	(i)	Give an account of Fiber Reinforced Plastics.	(8)
		(ii)	Write short notes on polymer blends and alloys.	(6)
			(OR)	
	b)		Describe the method of preparation, properties and applications of the following	
			i) Perlon-U	(4)
			ii) Polycarbonate	(5)
			iii) Nylon 6, 6.	(5)
25.	a)	(i)	Account on the characteristics of refractories.	(8)
		(ii)	Explain the significance of solid lubricants with example.	(6)
			(OR)	
	b)	(i)	Write notes on synthetic abrasives.	(8)
		(ii)	Discuss the properties of lubricants such as Flash point, fire point, cloud point and pour point.	(6)