A **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 51006

B.E./B.Tech. DEGREE EXAMINATION, NOV 2019

First Semester

Civil Engineering

15UCY106 - CHEMISTRY FOR CIVIL ENGINEERING

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

Answer All Questions

1. In PCl_5 molecules, the central '*P*' atom involves CO1- R

   (a) sp^2 hybridization (b) *sp* hybridization

   (c) sp^3 hybridization (c) sp^3 hybridization

2. Electronic configuration of oxygen atom is CO1- R

   (a) $1s^2 2s^2 2P^2$ (b) $1s^2 2s^2 P^5$ (c) $1s^2 2s^2 2P^6$ (d) $1s^2 2s^2 2P^4$

3. Under phosphate conditioning, which phosphate is used for too acidic nature of water CO2- R

   (a) Na_3PO_4 (b) $NaHPO_3$ (c) NaH_2PO_4 (d) Na_2HPO_4

4. What is the unit for hardness? CO2- R

   (a) ppm (b) ppt (c) nm (d) Kg

5. Process in which substance gains electrons is called CO3- R

   (a) oxidation (b) Hydrogenation

   (c) Sublimation (d) Reduction

6. Which of the following factors does not influence throwing power of electroplating bath CO3- R

   (a) Current density (b) Conductance of solution

   (c) Complexing agent (d) Competing electrode reaction

7. White alkali" soil are CO4- R

(a) Saline soil (b) acid soil

(c) Sodic soil (d) Saline sodic soil

8. For soils at the optimum pH, the most common ion on the exchange sites would be _____. CO4- R

(a) Aluminium (b) Hydrogen (c) Calcium (d) Potassium

9. Function of gypsum is to CO5- R

(a) Start the setting of cement (b) Stop the hydration of cement

(c) Retard the easily initial setting of cement (d) None of the above

10 Pug mill is used for CO5- R

(a) Preparation of clay (b) Moulding of clay

(c) Drying of bricks (d) Burning of bricks

PART – B (5 x 2= 10Marks)

11. Among KCl and NaCl, which is more stable? Give reason CO1- U

12. What are the requirements of boiler feed water? CO2- U

13. Bolt and nut made up of same metal is preferred in practice. why? CO3- Ana

14. Define sodic soil. CO4- U

15. Write a brief note on white portland cement CO5- U

PART – C (5 x 16= 80Marks)

16. (a) Molecular orbitals are formed by the linear combination of atomic orbitals (LCAO). Give the salient features of molecular orbital theory. CO1-U (16)

Or

(b) Explain the term hybridization. Give an account of the different types of hybridization with suitable examples. CO1 -U (16)

17. (a) How Permenant and Temperory hardness in a sample of water can be calculated by EDTA method. CO2 -U (16)

Or

(b) (i) What is desalination? Discuss any one process in detail with suitable diagram. CO2 -U (6)

(ii) Describe the demineralization process for softening of hard water. Mention the advantages and disadvantages of this method. CO2 -U (10)

18.	(a)	(i) Derive Nernst equation for electrode potential	CO3- U	(8)
		(ii) Explain the mechanism of wet corrosion with suitable example.	CO3- U	(8)
		Or		
	(b)	(i) List and explain the various factors that influence corrosion.	CO3-U	(8)
		(ii) What is paint? Give its constituents and functions with suitable example.	CO3-U	(8)
19.	(a)	Define adsorption isotherm. Explain the various types of adsorption isotherms briefly with the help of graph.	CO4-U	(16)
		Or		
	(b)	(i) Explain the oxidation and reduction reaction occurring in the soil.	CO4 -U	(8)
		(ii) Discuss the various organic matters present in the soil and give its significance.	CO4-U	(8)
20.	(a)	Explain the following terms in relation to refractories: (i) Dimensional stability (ii) Porosity (iii) Thermal spalling (iv) Refractorines under load	CO5- U	(16)
		Or		
	(b)	(i) Describe the various methods available for fabrication of ceramic ware.	CO5-U	(8)
		(ii) Write short note on: setting and hardening of Portland cement.	CO5-U	(8)