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

Question Paper Code: 51005

B.E./B.Tech. DEGREE EXAMINATION, MAY 2018

First Semester

Computer Science and Engineering

15UCY105 - APPLIED CHEMISTRY

(Common to EEE, ECE , IT,EIE and Biomedical Engineering)

Duration: Three hours Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

Answer All Questions

1. Vander walls forces are_____ CO1- R

(a) Strong forces (b) Weak forces (c) Neutral forces (d) None of the above

2. States of hybridization of P in PF5and Sin SF6 are respectively: CO1- R

(a) sp^3d^2,sp^3d (b) sp^3d,sp^3d^2 (c) sp^3,sp^3d (d) sp^2,sp^3

3. Dry corrosion is a process of contact of two metals CO2- R

(a) Indirectly (b) Directly

(c) Oppositely (d) Reversibly

4. Formation of rust on iron is an example of CO2- R

(a) Oxidation (b) Liquid metal corrosion

(c) Electrochemical corrosion (d) Chemical corrosion

5. Which of the following is a recharge cell? CO3- R

(a) Ni-Cd (b) Leclanche cell (c) H_2-O_2 Fuel cell (d) Ag0-Zinc cell

6. Which of the following is not true for H_2-O_2 fuel cell CO3- R

(a) H_2 gas is supplied at the anode (b) O_2 gas is supplied at the cathode

(c) O_2 is reduced to hydroxyl ions at cathode (d) Water is formed at the cathode

7. Name the thermal method of analysis in which no reference material is employed CO4- R

(a) Thermogravimetry (b) Differential thermal analysis

(c) Differential scanning calorimetry (d) All the above

8. Nowadays instrumental methods of analysis are preferred because CO4- R

(a) Less time consume, more reliable results (b) More time consumed

(c) Required more quantity sample (d) Often more destructive

9. Which is used as conducting polymers in smart window CO5- R

(a) Polyaniline (b) Polypyrrol (c) Polyacetylene (d) Polyethylene

10. The liquid crystal that possess a chiral centre are called CO5- R

(a) Cholesteric liquid crystal (b) Smectic liquid crtsal

(c) Nematic liquid crystal (d) Isotropic liquid crystal

PART – B (5 x 2= 10Marks)

11. State Octet rule. CO1- E

12. What is Pilling-Bedworth rule? CO2- U

13. Write the chemical reactions in *Zn-MnO_2* battery. CO3- Ana

14. State the Beer-Lamberts law. CO4- U

15. What is OLED? Give an example. CO5- U

PART – C (5 x 16= 80Marks)

16.	(a)	(i) Discuss briefly the molecular orbital theory. Discuss the formation of O_2 molecule on the basis of this theory.	CO1-U	(8)
		(ii) Write shorts notes on		
		(a) Aufbau principle	CO1-U	(4)
		(b) Pauli exclusion principle	CO1-U	(4)
		Or		
	(b)	Explain the various types of hybridization with examples.	CO1 -U	(16)
17.	(a)	(i) Derive Nernst's equation and give its significance.	CO2 -App	(8)
		(ii) What is emf? Explain the determine of emf of unknown cell by Poggendorff's method.	CO2 -App	(8)
		Or		
	(b)	(i) What is corrosion of metals? Describe the mechanism of electrochemical corrosion.	CO2 -U	(8)
		(ii) What is electroplating? Explain the electroplating of gold with neat diagram,	CO2 -U	(8)
18.	(a)	(i) Discuss the types of ion selective electrode in detail.	CO3- U	(10)
		(ii) Explain the construction, working and applications of Z_n-$M_n O_2$ battery.	CO3- U	(6)
		Or		
	(b)	(i) Elaborate the construction, working and application of lead acid batteries.	CO3-Ana	(8)
		(ii) Explain with a neat diagram and working principle of Hydrogen-Oxygen fuel cell	CO3-U	(8)
19.	(a)	Explain the principle and working of DTA with the suitable block diagram? Also compare DSC with suitable examples.	CO4-Ana	(16)
		Or		
	(b)	(i) What is meant by green chemistry? Explain the concept of 12 principles of green chemistry.	CO4 -U	(10)

(ii)Write a short notes on e-waste disposal. CO4-U (6)

20. (a) Explain briefly about doping technique adapting in conducting polymer. Illustrate with an example**.** CO5- U (16)

Or

(b) (i) Write short note on use of conducting polymers in organic light emitting diodes. CO5-U (8)

(ii) What is liquid crystal? Discuss any two applications of liquid crystal. CO5-U (8)