Reg. No. : | | | | | | | | | | |

Question Paper Code: 51105

B.E. / B.Tech. DEGREE EXAMINATION, DECEMBER 2015

First Semester

Computer Science and Engineering

15UCY105 - APPLIED CHEMISTRY

(Common to Electrical and Electronics Engineering, Electronics and Communication Engineering, Electronics and Instrumentation Engineering and Information Technology)

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The band between two identical non-metal atoms has a pair of electrons

   (a) equally shared between them (b) unequally shared between them
   (c) transferred fully from one atom to another (d) with identical spins

2. The bond order in N_2 _____

   (a) 3.0 (b) 4.0 (c) 0.5 (d) 1.0

3. An example of reversible cell is _____

   (a) zinc cell (b) silver cell (c) Daniel cell (d) dry cell

4. The rate of corrosion is directly proportional to _____

   (a) temperature (b) corrosive gases (c) humidity (d) pH

5. The electrolytic solution in nickel cadmium battery is _____

   (a) H_2SO_4 (b) KOH (c) MnO_2 (d) CH_3COOH

6. Which type of buffer is used in electrochemical bio sensors _____

(a) chromate (b) phosphate (c) sulphate (d) ammonia

7. What is the range of visible region?

(a) 200-400 nm (b) 400-1000 nm (c) 400-850 nm (d) 400-750 nm

8. The graph plotted between heat flow and temperature in _____

(a) TGA (b) DTA
(c) DSC (d) flame photometry

9. Conducting polyaniline is prepared by the

(a) oxidative doping of polyaniline (b) reductive doping of polyaniline
(c) protonic acid doping of polyaniline (d) all of the above

10. The An example for organic light emitting diode is _____

(a) sodium quinacridone (b) calcium quiancridone
(c) aluminium quinacridone (d) hydrogen quinacridoe

PART - B (5 x 2 = 10 Marks)

11. Define Chemical bond.

12. Mention the applications of Nernst equation.

13. Distinguish between primary and secondary batteries.

14. Draw a neat block diagram of UV-visible spectrophotometer.

15. List out the advantages of OLEDs.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain ionic, covalent and metallic bonds with examples. (8)

(ii) Define Vander walls forces. What are the factors that affect Vander walls forces? (8)

Or

(b) (i) Explain the determination of lattice energy with the help of Born Haber's cycle. (8)

(ii) Explain the molecular orbital theory in nitrogen molecule. Write its bonds order and bond energy. (8)

17. (a) (i) What is emf? Explain the determine of emf of unknown cell by Poggendorff's method. (8)

(ii) Derive Nernst equation for electrode potential. (8)

Or

(b) (i) What are objectives of electroplating? Explain gold platting. (10)

(ii) Discuss differential aeration corrosion with suitable examples. (6)

18. (a) (i) Describe the construction and working of lead acid battery. (10)

(ii) Write short notes on Biosensors. (6)

Or

(b) (i) Explain with a neat diagram and working principle of Hydrogen-Oxygen fuel cell. (8)

(ii) What are ion selective electrodes? Explain their types and applications. (8)

19. (a) (i) Discuss with a neat diagram, the principle, construction and working of an UV-visible spectro photometer. (8)

(ii) Describe the 12 goals of green chemistry. (8)

Or

(b) (i) Discuss briefly the principle, instrumentation and applications of X-ray diffractometer. (8)

(ii) Explain the principle, instrumentation of differential scanning calorimeter. (8)

20. (a) (i) What are conducting polymers? Explain their application in detail. (6)

(ii) What id OLED? Explain its structural and properties of OLED. (10)

Or

(b) What are Liquid Crystals (LC)? Explain their types, structure and applications in detail. (16)

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