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

Question Paper Code: R1Y04

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2024

First Semester

Electrical and Electronics Engineering

R21UCY105–APPLIED CHEMISTRY

(Common to ECE, BT, BME branch)

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The covalent bond is formed between _____ CO1-U

   (a) NaCl (b) $MgCl_2$ (c) H_2 (d) NaF

2. The Unit of Hardness---- CO1-U

   (a) ppm (b) Kcal/Molec (c) Kg (d) Joule

3. Distilled water can be obtained by CO1- U

   (a) boiling (b) Zeolite process (c) Lime-soda process (d) Ion-exchange process

4. Desalination of water can be carried out by CO1- U

   (a) Reverse osmosis (b) Zeolite process (c) Lime-soda process (d) Ion-exchange process

5. The mechanism of OLED is CO1- U

   (a) pi-pi*transition (b) n-n* transition

   (c) HOMO – LUMO transition (d) non-bonding transition

6. Liquid crystals have _____ order. CO1- U

   (a) orientation (b) position (c) both a and b (d) none of above

7. ------ method produce green energy CO1- U

   (a) Solar (b) OTEC (c) Wind (d) All the above

8. Which one is not a e-waste CO1- U

(a) Remote (b) Head phone (c) Computer (d) plastic

9. The byproduct produced in H_2-O_2 fuel cell is _____ CO1- U

a)H_2 b) O_2 c) H_2O d) CO_2

10. What type of electrochemical cell reaction takes place in anode is _____. CO1- U

a) Oxidation b) Reduction c) redox reaction d) all the above

PART – B (5 x 2= 10 Marks)

11. What are the types of chemical bonding? CO1- U

12. Write a method to differentiate hard water from soft water. CO1- U

13. What are smart materials? CO1- U

14. What is meant by Xenobiotic and Endogeneos substances? CO1- U

15. What are the components needs for storage energy? CO1- U

PART – C (5 x 16= 80 Marks)

16. (a) Discuss the hybridization involved in methane, acetylene and ethylene CO1-U (16)

Or

(b) Write a brief outline of the postulates of valence bond theory. Discuss SS, SP and SP overlapping using valence bond theory. CO1-U (16)

17. (a) Analyze the total, temporary and permanent hardness by EDTA method. CO5- Ana (16)

Or

(b) How to remove permanent hardness using synthetic chemical of Zeolite. CO5- Ana (16)

18. (a) Brief the classification and applications of liquid crystals. CO2-U (16)

Or

(b) What is OLED? Explain the schematic of OLED device and explain the working principle. CO2-U (16)

19. (a) What are the pollutants in e- waste and their impacts in human health CO2- U (16)

Or

(b) Discuss in detail about the Toxicology and Green chemistry. CO2- U (16)

20. (a) How do you produce electric energy tosupply H_2 and O_2 gas in fuel cell with 25 % KOH as electrolyte. CO4-AP (16)

Or

(b) Robert residing the place where the temperature around 25°C. He need 12V electricity for his two wheeler, what kind of battery he need to construct and discuss their components, construction and mechanism. CO4-AP (16)