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

Question Paper Code: 2034403

B.E. / B.Tech. DEGREE EXAMINATIONS, NOV / DEC 2024
Fourth Semester
Chemical Engineering
U20CY401 – APPLIED CHEMISTRY
(Regulation 2020)

Time: Three Hours Maximum: 100 Marks

Answer ALL questions

PART – A (10 x 2 = 20 Marks)

1. List two uses of isoquinoline in the pharmaceutical industry.

2. Write a chemical equation for the preparation of furan from furfural.

3. Define the term 'chromophore.

4. How do sulpha drugs differ in their mode of action compared to penicillin?

5. Name two metals that can form a galvanic couple.

6. Define cathodic protection**.**

7. Define a eutectic point in a phase diagram.

8. How the reduced phase rule differs from the general phase rule.

9. How can you experimentally determine the distribution coefficient of iodine between CCl_4 and H_2O?

10. Define the term 'solvent extraction.

PART – B (5 x 16 = 80 Marks)

11. (a) (i) Explain the preparation of pyrrole from succinimide. Provide the reaction mechanism and the significance of this method. (8)

(ii) Explain the chemical properties of pyridine. (8)

(OR)

(b) (i) Discuss in detail the properties and uses of quinoline. (8)

(ii)Discuss in detail the industrial synthesis of pyridine from acetaldehyde and ammonia. (8)

12. (a) Describe the synthesis of chloramphenicol and its role as an antibiotic. (16)

(OR)

(b) Describe the synthesis of malachite green and its applications. (16)

13. (a) Evaluate the electrochemical and chemical corrosion mechanism with suitable chemical reactions. (16)

(OR)

(b) Evaluate the environmental factors that influence the rate of corrosion. (16)

14. (a) (i) Explain the phase diagram of a one-component water system with a neat diagram. (8)

(ii) Explain the principles of thermal analysis in the context of phase diagrams. (8)

(OR)

(b) Describe the phase diagram of the lead-silver system and discuss the Pattinson process and its importance in the lead-silver system. (16)

15. (a) Analyze the four types of colligative properties and their significance. (16)

(OR)

(b) (i) Define the distribution coefficient and explain its significance. (8)
(ii) Compare and contrast the interactions of a solute with polar and non-polar solvents. (8)

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