PART-I

A. Answer any five questions from 1 to 9. Each carries 1 score.   (5 × 1 = 5)

1. Which of the following is a ferromagnetic substance ?

    (a) NaC*l*

    (b) Co

    (c) MnO

    (d) H_2O

2. The electrolyte used in Lead Storage battery is _____ .

3. The concentration term that varies with temperature is

    (a) Mass %

    (b) Mole fraction

    (c) Molality

    (d) Molarity

4. The unit of rate constant of a first order reaction is _____ .

5. Name the metal that can be purified by Mond's process.
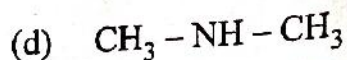
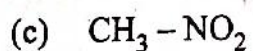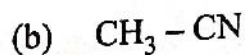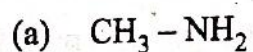6. Which of the following is a macromolecular colloid ?
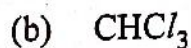
    (a) Gold sol

    (b) Sulphur sol

    (c) Rubber latex

    (d) As_2S_3 sol

7. Carbyl amine reaction is given by –

(a) $CH_3 - NH_2$

(b) $CH_3 - CN$

(c) $CH_3 - NO_2$

(d) $CH_3 - NH - CH_3$

8. Find the product formed when formaldehyde reacts with $CH_3 - Mg - Cl$.

9. The chemical formula of phosgene is

(a) $CaCl_2$

(b) $CHCl_3$

(c) $COCl_2$

(d) PH_3

B. Answer all questions from 10 to 13. Each carries 1 score. $(4 \times 1 = 4)$

10. Which of the following base is not present in R.N.A. ?

(a) Adenine

(b) Thymine

(c) Guanine

(d) Uracil

11. The compounds required for the preparation of Bakelite are

(a) Urea, formaldehyde

(b) Phenol, formaldehyde

(c) Melamine, formaldehyde

(d) Phenol, Urea

12. Saccharin is used as

    (a) Tranquilizer   (b) Food preservative

    (c) Artificial sweetener   (d) Anti-oxidant

13. During galvanisation the iron surface is coated with

    (a) Mercury   (b) Zinc

    (c) Tin   (d) Aluminium

PART-II

A.. **Answer any two questions from 14 to 17. Each carries 2 scores.** $(2 \times 2 = 4)$

14. Distinguish between order and molecularity of chemical reaction.

15. What is Lanthanoid Contraction ? Mention any one consequence of it.

16. What is the chemical name of Hinsberg reagent ? What is its use ?

17. Calculate the osmotic pressure of 0.1 M glucose solution at 27 °C (R = 0.082).

B. **Answer any two questions from 18 to 20. Each carries 2 scores.**

                                                                                         $(2 \times 2 = 4)$

18. Explain the behaviour of conductor and insulator using Band theory.

19. How is Potassium Permanganate prepared ?

20. Write the two stages involved in the conversion of Aniline to Phenol.

ME-525   6

PART-III

21. Distinguish between Schottky and Frenkel defect.

22. A first order reaction is 90% completed in 20 seconds. Find the rate constant and half-life period.

23. What is Williamson's synthesis ? How is it used to prepare methoxy benzene ?

24. (i) What is Reimer-Tiemann reaction ?   **2**

    (ii) Identify the products formed when phenol is treated with Bromine water.   **1**

25. (i) What is Vant Hoff factor ?   **1**

    (ii) The molar mass of benzoic acid measured from colligative property shows abnormal value. Explain.   **2**

26. (i) Halo arenes are less reactive in nucleophilic substitution. Why ?   **2**

    (ii) What is Wurtz-Fittig reaction ?   **1**

27. (i) Explains the hydroboration – oxidation of propene.   **2**

    (ii) What is Wood Spirit ?   **1**

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PART-IV

A. **Answer any three questions from 28 to 31. Each carries 4 scores.** $(3 \times 4 = 12)$

28. (i) What are Fuel Cells ? Explain the working of H_2–O_2 fuel cell.   3

     (ii) Give any two advantages of fuel cells.   1

29. (i) Match the following :   2

Polymer	Monomer
HDP	Amino acid
Teflon	Ethylene
Protein	D-Glucose
Starch	Tetra fluoro ethene

     (ii) What is Vulcanisation ? How it enhances the properties of rubber ?   2

30. (i) Hydrolysis of sucrose is called inversion of sugar. Why ?   2

     (ii) Why sucrose is called a Non-reducing sugar ?   2

31. (i) Explain the steps involved in the leaching of Bauxite.   3

     (ii) What is the role of Cryolite in the metallurgy of Aluminium ?   1

B. Answer any one question from 32 to 33. Each carries 4 scores. $(1 \times 4 = 4)$

32. (i) What is the Brownian movement ? What is reason for this movement ?   2

     (ii) What are Zeolites ? Write its use.   2

33. (i) Distinguish between Anionic and Cationic detergents with example.   2

     (ii) What are broad spectrum antibiotics ? Give example.   2

PART-V

Answer any two questions from 34 to 36. Each carries 6 scores.

$(2 \times 6 = 12)$

34. (i) What are the major steps involved in the contact process for the manufacture of sulphuric acid ?   3

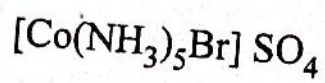   (ii) What are inter halogen compounds ? Give two examples.   2

     (iii) PCl_3 fumes in moist air. Why ?   1

35. (i) What is Rosenmund's reduction ?   2

     (ii) Give the aldol condensation product of CH_3-CHO.   2

     (iii) Which is the strongest acid – acetic acid, chloro acetic acid or fluoro acetic acid ? Justify.   2

36. (i) Give the IUPAC name of

$[Co(NH_3)_5Br] SO_4$

$[Ni(CO)_4]$

(ii) Explain Linkage isomerism with an example.

(iii) Represent the geometrical isomers of $[Co(NH_3)_4 Cl_2]$

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