3123(N)

II

Total No. of Questions : **38**
Total No. of Printed Pages : **3**

Regd. No.

Part - III

CHEMISTRY - PAPER - I

(NEW)

(English Version)

Time : 3 Hours **Max. Marks : 85**

SECTION - A

I. Answer *all* the following questions. Each question carries *one* mark. **9x1=9**

1. The drug Azidothymidine (AZT) is used in the treatment of :
(1) Cancer (2) AIDS (3) Bronchitis (4) Ulcer

2. Which of the following is ionic ?
(1) KI (2) CH_4 (3) Diamond (4) H_2

3. The oxidation number of Sulphur in $Na_2S_4O_6$ is :
(1) 2.5 (2) 1.5 (3) 2 (4) 3

4. Splitting of spectral lines in electric field is called _____.

5. For an isolated system, $\Delta U = 0$, the value of ΔS will be _____.

6. Ethyl alcohol and methyl alcohol can be separated by _____ method.

7. What is diagonal relationship ?

8. What is the value of K_w at 25°C ?

9. What is Lindlar's catalyst ?

SECTION - B

II. Answer *all* the following questions. Each question carries *two* marks. **14x2=28**

10. What is Aufbau principle ?

11. What is a black body ?

12. The empirical formula of a compound is CH_2O. It's molecular mass is 90. Calculate the molecular formula of the compound.

13. How many moles of glucose are present in 540 g of glucose ?

14. Name any two bridge elements.

15. State the third law of thermodynamics.

16. What is heterogeneous equilibrium ? Give two examples.

17. Write the bond order and magnetic behaviour of H_2.

18. State Octet rule.

19. What is Wurtz' reaction ? Give one example.

20. What is Friedel-Crafts alkylation ?

21. How many π and σ bonds are present in each of the following molecules ?

(1) $HC \equiv CCH = CHCH_3$ (2) $CH_2 = C = CHCH_3$

22. What is carbocation ? Give example.

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23. Write formulae for the following compounds.

(a) Nickel(II) sulphate (b) Thallium(I) sulphate

SECTION - C

III. Answer *any eight* of the following questions. Each question carries *four* marks. **8x4=32**

24. Give any four characteristic properties of transition elements.

25. A carbon compound contains 12.8% carbon, 2.1% hydrogen and 85.1% bromine. The molecular mass of the compound is 187.9 u. Calculate its molecular formula.

26. Explain the difference between orbit and orbital.

27. What are σ and π bonds ? Specify the differences between them.

28. Explain the hybridisation involved in PCl_5 molecule.

29. State Le Chatelier's Principle. Discuss the application of Le Chatelier's principle for the industrial synthesis of Ammonia by Haber's process.

30. The species H_2O, HCO_3^-, HSO_4^- and NH_3 can act both as Bronsted acids and bases. Give the corresponding conjugate acid and base for each of them.

31. What are open, closed and isolated systems ? Give one example for each.

32. State and explain the Hess's law of constant Heat summation.

33. Complete the following reaction and name the products A, B and C.

$$CaC_2 \xrightarrow{H_2O} A \xrightarrow[\text{Hot metal tube}]{} B \xrightarrow{AlCl_3 + CH_3Cl} C$$

34. Balance the following redox reactions by ion-electron method (in acidic medium) :

$$Cr_2O_7^{2-}(aq) + Fe^{2+}(aq) \rightarrow Cr^{3+}(aq) + Fe^{3+}(aq)$$

35. What is position isomerism and functional isomerism ? Give one example for each.

SECTION - D

IV. Answer *any two* of the following questions. Each question carries *eight* marks. **2x8=16**

36. What are quantum numbers ? Explain the significance of quantum numbers.

37. Define IE_1 and IE_2. Why IE_2 is always greater than IE_1 for a given atom ? Discuss the factors that effect IE of an element.

38. Describe two methods of preparation of Ethylene. How does it reacts with the following ? Give equations.

(a) Ozone (b) Cold and dil.alk $KMnO_4$ (c) Br_2

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