Class : 11

Register Number

FIRST REVISION EXAMINATION, JANUARY - 2025

Time Allowed : 3.00 Hours] **CHEMISTRY** [Max. Marks : 70

PART - I

I. Choose the most appropriate answer from the give four alternativesand write the option code and the corresponding answer. 15x1=15

1. Each atom in H_2, Cl_2, Na, S_8 have the oxidation number of ----------
   a) 1 b) 2 c) 0 d) 8
2. How many orbitals are possible in the 3rd energy level? (n=3)
   a) 16 b) 0 c) 4 d) 9
3. What would be the IUPAC name for the atomic number 115?
   a) Ununpentium b) Ununseptium c) Ununbium d) Ununquadium
4. Tritium has a half-life period of ---------- years?
   a) 1.23 b) 12.3 c) 13.2 d) 32.1
5. An isotope of ---------- is used as a source in the calibration of gamma ray detectors in nuclear chemistry?
   a) Magnesium b) Barium c) Radium d) Calcium
6. The value of universal gas constant depends upon ----------
   a) Temperature of the gas b) Volume of the gas
   c) Number of moles of the gas d) units of Pressure and volume.
7. The heat of formation of CO and CO_2 are - 26.4 kCal and - 94 kCal, respectively. Heat of combustion of carbon monoxide will be ----------
   a) + 26.4 kcal b) - 67.6 kcal c) - 120.6 kcal d) + 52.8 kcal
8. **Assertion :** An ideal solution obeys Raoult's law
   Reason : In an ideal solution, solvent, solvent as well as solute-solute interactions are similar to solute-solvent interactions.
   a) both assertion and reason are true and reason is the correct explanation of assertion
   b) both assertion and reason are true but reason is not the correct explanation of assertion
   c) assertion is true but reason is false d) both assertion and reason are false
9. For very dilute solutions the solvent obeys ---------- law and the solute obeys ---------- 's law
   a) Henry, Raoult b) Raoult, Henry c) Raoult, Raoult d) Henry, Henry
10. The number of sigma bond / s in ethylene molecule is ----------
    a) 1 b) 2 c) 3 d) 4
11. The general formula for alkadiene is ----------
    a) C_nH_{2n} b) C_nH_{2n-1} c) C_nH_{2n-2} d) C_nH_{n-2}
12. Which one of the following names does not fit a real name?
    a) 3 - Methyl - 3 - hexanone b) 4 - Methyl - 3 - hexanone
    c) 3 - Methyl - 3 - hexanol d) 2 - Methyl cyclo hexanone.
13. Homolytic fission of covalent bond leads to the formation of ----------
    a) electrophile b) nucleophile c) Carbo cation d) free radical
14. When sodium benzoate in heated with sodalime, ---------- vapours distil over.
    a) toluene b) benzoic acid c) phenol d) benzene
15. Bhopal Gas Tragedy is a case of ---------- pollution.
    a) thermal b) air c) nuclear d) land

PART - II

II. Answer any 6 questions. Question number 24 is compulsory. 6x

16. What do you understand by the term mole?
17. Define modern periodic law.
18. Explain Hydrogen bonding with their types

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19. State Zeroth law of thermodynamics.
20. What is green chemistry?
21. Write Davison and Germer experiment
22. How does Huckel rule help to decide the aromatic character of a compound.
23. Explain inductive effect with suitable example.
24. If an automobile engine burns petrol at a temperature of 816° C and if the surrounding temperature is 21° C, calculate its maximum possible efficiency.

PART – III

III. Answer any 6 questions. Question number 33 is compulsory. 6x3=18

25. Calculate the empirical and molecular formula of a compound containing 76.6% carbon, 6.38 % hydrogen and rest oxygen its vapour density is 47.
26. How will you prepare tritium?
27. Discuss the similarities between beryllium and aluminium.
28. Explain Joule- Thomson effect?
29. State the law of mass action.
30. What type of hybridisations are possible in the following geometeries?
    a) octahedral b) tetrahedral c) square planer.
31. Write short notes on a) Resonance b) Hyperconjucation
32. How is acid rain formed? Explain its effects.
33. **Give IUPAC names for the following organic compounds.**
    i) CH_3-$CH(CH_3)$ - CH_2OH ii) $(CH_3)_2CH$ - $CH = CH_2$ iii) $(CH_3)_2CH$ - CH_2 - OH

PART - IV

IV. Answer all the questions. 5x5=25

34. a) i) What is the de Broglie wavelength (in cm) of a 160g cricket ball travelling at 140 Km hr^{-1}. (3)
    ii) State Aufbau principle? (2)

(OR)

b) i) How would you explain the fact that the second ionisation potential is always higher than first ionisation potential? (3)
    ii) Discuss the three types of covalent hydrides. (2)

35. a) i) Explain the pauling method for the determination of ionic radius. (3)
    ii) How is plaster of paris prepared? (2)

(OR)

b) Derive the values of critical constants in terms of van der Waals constants. (5)

36. a) i) Derive the relation between ΔH and ΔU for an ideal gas. (3)
    ii) In what way real gases differ from ideal gases. (2)

(OR)

b) List the characteristics of internal energy. (5)

37. a) i) Derive the relationship between Kp & Kc (3)
    ii) State Roult's law. (2)

(OR)

b) i) Discuss the formation of NO molecule using MO Theory. (3)
    ii) Write a note on Corey House mechanism. (2)

38. a) i) An organic compound (A) of molecular formula C_2H_4 decolourises Bromine water. Com
    (A) reacts with chlorine gives compound (B). Compound (A) also reacts with KBr g
    compound (C). Identify (A), (B) and (C). (3)
    ii) Briefly explain Birch reduction. (2)

(OR)

b. i) Explain S_N2 reaction mechanism. (3)
    ii) Write the general molecular formulae for a) alkene b) alkyne. (2)

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