

Padasalai.Net's PRE-HALF YEARLY QUSTION PAPER-2016

STD: XII

MARK: 150

SUB: CHEMISTRY

TIME: 3 H

I. Choose the correct answer

30 x 1 = 30

- The intramolecular Hydrogen bonding is present in
A) o - nitro phenol B) m - nitro phenol C) p - nitro phenol D) p - hydroxy Benzaldehyde
- The type of Hybridization in BrF_5
A) sp^3 B) sp^3d^2 C) dsp^3 D) sp^3d
- When $X_A \gg X_B$, A - B bond is
A) Polar covalent B) Non - polar covalent C) Ionic D) metallic
- Electronic configuration of 14th group element is
A) ns^2np^2 B) ns^1np^1 C) ns^1np^2 D) ns^2np^1
- Which of the following has maximum number of unpaired electrons?
A) Ni^{2+} B) Ti^{3+} C) V^{3+} D) Fe^{2+}
- The role of aluminium in aluminothermic process is
A) An oxidizing agent B) a reducing agent C) dehydrating agent D) a catalyst
- Maximum oxidation state exhibited by Lanthanide is
A) +1 B) +2 C) +3 D) +4
- The oxides of Lanthanides used in gas lamp materials are
A) CeO_2 and NdO_2 B) CeO_2 and ThO_2 C) ThO_2 and SmO_2 D) LnO_2 and CeO_2
- The name of $[\text{PtIV}(\text{NH}_3)_2\text{Cl}_2]^{2+}$ is
A) Diammine dichloro platinum (IV) ion B) Diammine dichloro platinum (IV)
C) Diammine dichloro platinum D) Dichloro diammine platinum (IV)
- In the nuclear reaction ${}_{93}\text{U}^{238} \rightarrow {}_{82}\text{Pb}^{206}$ the number of α and β particles emitted are
A) $7\alpha, 5\beta$ B) $6\alpha, 4\beta$ C) $4\alpha, 3\beta$ D) $8\alpha, 6\beta$
- In a simple cubic cell, each point on a corner is shared by
A) One unit cell B) two unit cell C) 8 unit cell D) 4 unit cell
- In an adiabatic process which of the following is true
A) $q = w$ B) $q = 0$ C) $\Delta E = q$ D) $p \Delta v = 0$
- In which of the following process, the process is always feasible
A) $\Delta H > 0; \Delta S > 0$ B) $\Delta H < 0; \Delta S > 0$ C) $\Delta H > 0; \Delta S < 0$ D) $\Delta H < 0; \Delta S < 0$
- For homogeneous gas reaction at 600 K $4 \text{NH}_3(\text{g}) + 5 \text{O}_2(\text{g}) \rightarrow 4 \text{NO}(\text{g}) + 6 \text{H}_2\text{O}(\text{g})$ at equilibrium constant, K_C has the unit
A) $(\text{Mol dm}^{-3})^{-1}$ B) (mol dm^{-3}) C) $(\text{mol dm}^{-3})^{10}$ D) $(\text{mol dm}^{-3})^{-9}$
- The catalyst used in the manufacture of SO_3 is
A) Moist V_2O_5 B) Dry V_2O_5 C) porous V_2O_5 D) Fe

16. The rate constant for a first order reaction is $1.54 \times 10^{-3} \text{ Sec}^{-1}$. Calculate its half-life period.
A) 400 sec B) 450 sec C) 120 sec D) 1540 sec
17. Fog is a colloidal solution of
A) Gas in liquid B) liquid in gas C) gas in solid D) solid in gas
18. Collidal antimony is used in curing
A) Malaria B) Kalazar C) Janndice D) Head ache
19. The Magnitude of gaseous adsorption
A) Tempreature B) Nature of gas C) Pressure D) Amont of the adsorbent
20. For the titration between oxalie Acid and sodium Hydroxide the Indicator used is
A) Pottasium permanganate B) Phenolphthlein C) Litmus D) Menthyl orange
21. The active component of dynamite is
A) Keiselgur B) Nitro glycerine C) Nitro benzene D) Trinitro toluene
22. According to lewis concept of acids and bases ethers are
A) Neutra I B) Acidic C) Basic D) Amphoteric
23. Which reaction is used in zeisels method of detection and estimation at alkoxy group
A) akyl halide + sodium group B) natural products + exess of HI
C) Ethers + oxygen D) alcohol + acid
24. The compund used in the preparation of the tranquilizer sulphonal is
A) Acetone B) acetophenone C) Isopropyl alcohol D) glycol
25. The compound which does not undergo inter molecular dehydration with P_2O_5 is
A) Acetic acid B) Formic acid C) Propionic acid D) butyric acid
26. The compound that is most reactive towards electrophilic nitration is
A) Toluene B) benzene C) benzoic acid D) nitrobenzene
27. Sulpha drugs are prepared from
A) melthy lamine B) aniline C) benzylamine D) N, N dimethylamine
28. IUPAC name of methyl cyanide is
A) Methane nitrile B) aceto nitrile C) ethane nitrile D) cyono methane
29. The secondary structure of proteins refers to
A) Sequence of amino acids B) α (or) β Helical structure C) nuclie acids D) lipids
30. D (+) glucose and D (-) Fructose are isomers
A) Optical B) geometrical C) position D) Functional

PART - II

Note: i) answer any fifteen questions.

ii) Each answer should be in one or two sentences. $15 \times 3 = 45$

31. Explain the significance of negative electronic energy.
32. The experimental value of $d(\text{C} - \text{Cl})$ is 1.76 \AA what is the atomic radius of carbon?

$r(\text{Cl}) = 0.99 A_0$

33. Why do d-block elements exhibit variable oxidation state?
34. What is meant by Spitting of Silver? How can it be prevented?
35. Prove that P_2O_5 is a powerful dehydrating agent.
36. Write any three uses of lead.
37. Determine the average life of U^{238} having $t_{1/2} = 140$ days.
38. Write a short note on metallic crystals.
39. State le chatlier's principle.
40. What is the Entropy change of an Engine that operates at 100°C when 453.6 K.Cal of heat is supplied to it?
41. Write the Arrhenius equation and explain the terms.
42. Show that half-life period of a first order reaction independent of initial concentration.
43. What is an auto catalyst? Give an example.
44. What is common ion effect?
45. What is racemic mixture? Give an example.
46. Write the dye Test for phenol.
47. How does glycerol react with KHSO_4 ?
48. How is acetophenone prepared by Friedal - crafts reaction?
49. What happens when Acetic acid is treated with Bromine in the presence of Phosphorous Tri Bromide?
50. An aromatic simplest nitro compound A on reduction using LiAlH_4 gives B. B undergoes carbylamines reaction. What are A and B? What is the other name of A?
51. What are antipasmotics? Give an example.

PART - III

Note: Answer any seven questions choosing atleast two questions from each section. $7 \times 5 = 35$

Section - A

52. Apply molecular orbital theory to nitrogen molecule.
53. How is zinc extracted from its ore?
54. Give the comparison of Lanthanides and actinides (any five)
55. Explain co-ordination and ionisation isomerism with suitable examples.

Section - B

56. Give the characterization of entropy.
57. Apply le - chatliers braun principle to obtain the conditions for maximum yield of ammonia in Haber's process.
58. Explain various types of complex reactions and give one example for each.

59. Calculate the standard e.m.f. of the cell $\text{Cd} // \text{Cu}^{2+}$, Cu and determine the cell reactions, the standard reduction potentials of Cu^{2+} , Cu and Cd^{2+} , are 0.34 volt and - 0.4 volt respectively, predict the feasibility of the cell reaction.

Section - C

60. Distinguish between aromatic (Anisole) and aliphatic ethers (Diethylether).
61. Explain the mechanism of simple cannizaro's reaction.
62. Convert (i) Ethylene Dibromide into Succinic acid (ii) Cane sugar to Lactic acid
63. Explain briefly on the characteristics of rocket propellants.

PART - IV

Note:i) Question No.70 is compulsory and answer any three from the remaining questions.

ii) Answer four questions in all.

4x10=40

64. a. Explain Pauling's method to determine ionic radii.
b. How are noble gases separated by Dewar's method?
65. a. Mention the function of hemoglobin in natural process.
b. Write a note on radio carbon dating.
66. a. Explain Bragg's spectrometer method.
b. Write briefly about the preparation of colloids by condensation methods.
67. a. Write a note on applications of Kohlrausch's law.
b. Give the IUPAC conventions for writing cell diagram with suitable example.
68. a. Explain external and internal compensation.
b. How will you get the following from benzoic acid.
1. Benzene 2. Benzyl alcohol 3. Ethyl benzoate.
69. a. How is Schiff's base, methyl isocyanide and methyl alcohol obtained from methyl amine.
b. Explain the biological importance of lipids.
70. a. An organic compound 'A' with molecular formula $\text{C}_2\text{H}_6\text{O}_2$ with conc H_2SO_4 gives B ($\text{C}_4\text{H}_8\text{O}_2$) 'A' undergoes oxidation using HIO_4 gives compound (C) 'A' also heating with anhydrous ZnCl_2 that gives compound (D) ($\text{C}_2\text{H}_4\text{O}$) 'D' undergoes iodoform test. What are A, B, C, D.
b. Compound 'A' is a powerful oxidising agent and also it is a red orange crystal which melts at 396°C . 'A' reacts with chloride salt and conc. H_2SO_4 to give 'B' which is red orange in colour. 'A' also reacts with an alkali to give 'C' which is yellow in colour. Find out A, B and C. Explain the reactions.
c. An organic compound A ($\text{C}_7\text{H}_6\text{O}$) has a bitter almond smell with ammonia 'A' gives 'B' ($\text{C}_{21}\text{H}_{18}\text{N}_2$) with aqueous alcoholic KCN. 'A' gives 'C' ($\text{C}_{14}\text{H}_{12}\text{O}_2$). With aromatic tertiary amine 'A' gives 'D' $\text{C}_{23}\text{H}_{26}\text{N}_2$ what are A, B, C and D Explain the reactions.
d. Calculate the pH of 0.1M CH_3COOH solution. Dissociation constant of acetic acid is 1.8×10^{-5} M.

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