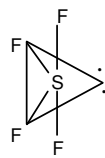


OJEE CHEMISTRY SOLUTION 2011

TEST HELD ON 08.05.11

This writeup aims to help you to assess your score in the Orissa JEE-2011. The qns stated have been collected from memory of iBooks Institute® students who appeared at the Exam on 08.05.11. Though we have tried to be accurate, there may be errors (in Qns as well as Answers) in whatever has been stated here. iBooks Institute® is not responsible for the same.

1. Bond order and magnetic moment of CO^+ is (a) 3 and paramagnetic (b) 3.5 and paramagnetic (c) 2.5 and diamagnetic (d) 3.5 and diamagnetic. **Ans.** 3.5 and paramagnetic
2. Formula for hexaaquamanganese(II) phosphate is (a) $[\text{Mn}(\text{H}_2\text{O})_6]_3(\text{PO}_4)_2$ (b) $[\text{Mn}(\text{H}_2\text{O})_6(\text{PO}_4)_2$ (c) $[\text{Mn}(\text{H}_2\text{O})_6]\text{PO}_4$ (d) $\text{Mn}(\text{H}_2\text{O})_6\text{PO}_4$. **Ans.** $[\text{Mn}(\text{H}_2\text{O})_6]_3(\text{PO}_4)_2$.
3. Aspirin is (a) antiseptic (b) antibiotic (c) analgesic (d) antipyretic **Ans.** Analgesic
4. Iodobenzene is obtained from reaction of benzene and iodine in presence of (a) Fe (b) FeI_3 (c) HNO_3 (d) Sunlight. **Ans.** HNO_3 **Reason.** The reaction is irreversible in presence of HNO_3
5. P_4O_6 reacts water to form (a) H_3PO_3 (b) H_3PO_4 (c) H_3PO_2 (d) HPO_3 **Ans.** H_3PO_3 **Reason:** $\text{P}_4\text{O}_6 + \text{H}_2\text{O} \longrightarrow 2\text{H}_3\text{PO}_3$
6. P_2O_5 reacts with nitric acid to form (a) NO_2 and H_3PO_3 (b) N_2O_5 and H_3PO_4 (c) N_2O_5 and HPO_3 (d) NO_2 and H_3PO_4 . **Ans.** N_2O_5 and HPO_3 .
7. Which is not an intensive property (a) volume (b) molarity (c) Refractive index (d) density. **Ans.** Volume
8. Pentagonal bipyramidal bond angle (a) $72^\circ, 90^\circ, 180^\circ$ (b) $72^\circ, 120^\circ, 180^\circ$ (c) $72^\circ, 120^\circ, 120^\circ$ (d) $90^\circ, 120^\circ, 180^\circ$. **Ans.** $72^\circ, 90^\circ, 180^\circ$
9. For a spontaneous reaction (a) $\Delta S > 0$ (b) $\Delta S < 0$ (c) $\Delta H > 0$ (d) $\Delta G > 0$ **Ans.** $\Delta S > 0$
10. Salicylaldehyde is obtained from phenol and (a) $\text{CHCl}_3 + \text{NaOH}$ (b) $\text{CH}_2\text{Cl}_2 + \text{NaOH}$ (c) $\text{CCl}_4 + \text{NaOH}$ (d) $\text{CH}_3\text{Cl} + \text{NaOH}$. **Ans.** $\text{CHCl}_3 + \text{NaOH}$
11. Systematic name of PhCH_2COOH is (a) 2-Phenylthanoic acid (b) benzoic acid (c) phenyl acetic acid (d) carboxymethyl benzene. **Ans.** 2-Phenylthanoic acid.
12. Lithium in liquid ammonia in organic reaction will act as (a) oxidizing agent (b) reducing agent (c) base (d) acid. **Ans.** reducing agent.
13. Permanganate ion in acidic medium changes to (a) Mn^{++} (b) MnO_2 (c) MnO_4^{---} (d) MnO **Ans.** Mn^{++}
14. Formula of thiosulphate, manganate and arsenate is (a) $\text{S}_2\text{O}_3^{--}, \text{MnO}_4^{--}, \text{AsO}_4^{---}$ (b) $\text{S}_2\text{O}_3^{--}, \text{MnO}_4^{--}, \text{AsO}_3^{---}$ (c) $\text{S}_4\text{O}_6^{--}, \text{MnO}_4^{--}, \text{AsO}_3^{---}$ (d) $\text{MnO}_4^{--}, \text{S}_2\text{O}_3^{--}, \text{AsO}_4^{---}$ **Ans.** $\text{S}_2\text{O}_3^{--}, \text{MnO}_4^{--}, \text{AsO}_4^{---}$
15. Glucose in presence of Tollen's reagent gives (a) monocarboxylic acid (b) Dicarboxylic acid (c) Tricarboxylic acid (d) Alcohol **Ans.** Monocarboxylic acid **Reason:** $\text{CH}_2\text{OH}(\text{CHOH})_4\text{CHO} + \text{Ag}_2\text{O} \rightarrow \text{CH}_2\text{OH}(\text{CHOH})_4\text{COOH} + \text{Ag}$
16. Structure of $[\text{Co}(\text{NH}_3)_6]_2$ resembles with (a) CaF_2 (b) ZnS (c) CrO_3 (d) NaCl . **Ans.** NaCl
17. Cis-2-butene and trans-2-butene are (a) Geometrical isomer (b) Conformation isomer (c) Configurational isomer (d) optical isomer **Ans.** Geometrical isomer
18. Which has largest size? (a) Ba^{++} (b) Cs^+ (c) I^- (d) Te^{--} **Ans.** Te^{--} **Reason.** Correct order is $\text{Te}^{--} > \text{I}^- > \text{Cs}^+ > \text{Ba}^{++}$
19. Configurational isomer of tartaric acid is (a) 1 (b) 2 (c) 3 (d) 4. **Ans.** 3. **Reason.** Active = 2, Meso = 1, Total = 3
20. Bond angle in SF_4 is (a) $90^\circ, 120^\circ$ (b) $90^\circ, 109^\circ$ (c) $89^\circ, 117^\circ$ (d) $72^\circ, 90^\circ$ **Ans.** $89^\circ, 117^\circ$ **Reason:**

21. NH_4HF_2 in aqueous medium ionises to (a) $\text{NH}_4^+ + \text{HF}_2^-$ (b) $\text{NH}_4^+ + \text{H}^+ + \text{F}_2^-$ (c) NH_3 and HF (d) none **Ans.** $\text{NH}_4^+ + \text{HF}_2^-$

22. pH of 10^{-2} M $\text{Ca}(\text{OH})_2$ is (a) 12 (b) 2 (c) 12.3 (d) 2.3 **Ans.** 12.3
23. pH of 10^{-8} HNO_3 is (a) 8 (b) 7 (c) 6.96 (d) 6.5 **Ans.** 6.96 **Reason:** $\text{pH} = -\log(10^{-8} + 10^{-7}) = 6.958$
24. Co-ordination number in CsCl is (a) 6 : 6 (b) 4 : 8 (c) 8 : 4 (d) 8 : 8 **Ans.** 8 : 8
25. Limiting radius ratio in Co-ordination number 6 is (a) 0.414 (b) 0.441 (c) 0.255 (d) 0.153. **Ans.** 0.414
26. A substance to be protein must have (a) Carboxylic acid (b) Amide (c) Amine (d) Imine **Ans.** amide
27. Indigo is a (a) organic dye (b) polymer (c) inorganic pigment (d) medicine. **Ans.** organic dye
28. Ethyl propanoate on alkaline hydrolysis gives (a) sodium and ethanol (b) ethanol & sodium propanoate (c) sodium acetate & propanol (d) Propanol and sodium propanoate. **Ans.** ethanol & sodium propanoate
29. C – H bond energy in ethane is (a) 8 cal (b) 80 kcal (c) 100 kcal (d) 180 kcal **Ans.** 100 kcal
30. ΔH_f° of CO_2 is equal to (a) combustion CO with gaseous oxygen (b) combustion of C(s) with gaseous oxygen (c) both combustion CO with gaseous oxygen and combustion of C(s) with gaseous oxygen (d) None. **Ans.** combustion of C(s) with gaseous oxygen
31. White precipitate is obtained when ammonical AgNO_3 reacts with (a) Ethylene (b) Acetylene (c) Ethane (d) Butene. **Ans.** Acetylene
32. Acetaldehyde on reaction with HCN followed by hydrolysis gives (a) R-Configuration (b) S-configuration (c) 1 : 1 R and S configuration (d) None. **Ans.** 1 : 1 R and S configuration.
33. In the melting of solid, enthalpy change will be (a) +ve (b) –ve (c) zero (d) both +ve & -ve. **Ans.** +ve
34. ΔH_f° is zero in (a) $\text{F}_{(\text{aq})}^-$ (b) $\text{HF}_{(\text{aq})}$ (c) $\text{F}_{(\text{g})}$ (d) $\text{F}_{2(\text{g})}$ **Ans.** $\text{F}_{2(\text{g})}$
35. Bakelite is formed from (a) Phenol & HCHO (b) Phenol & CH_3CHO (c) CH_3CHO & HCHO (d) Benzyl alcohol & HCHO. **Ans.** Phenol & HCHO
36. ${}_{24}\text{Cr}^{50} + {}_2\alpha^4 \longrightarrow \text{_____} + {}_0n^1$. The unknown substance is (a) ${}_{26}\text{Fe}^{53}$ (b) ${}_{26}\text{Fe}^{55}$ (c) ${}_{22}\text{Ti}^{53}$ (d) ${}_{22}\text{Ti}^{54}$. **Ans.** ${}_{26}\text{Fe}^{53}$
37. Which of the following is correct in case of buffer solution ? (a) is sensitive to addition of little amount of acid or base (b) pH change with change in dilution (c) both is sensitive to addition of little amount of acid or base and pH change with change in dilution (d) None. **Ans.** is sensitive to addition of little amount of acid or base
38. For a reaction $\text{X} + \text{Y} \rightleftharpoons \text{P} + \text{Q}$, on doubling the concentration of reactant, equilibrium constant (a) doubles (b) increase four times (c) remains constant (d) reduced to half. **Ans.** remains constant.
39. Le-chatelier's principle is applicable to (a) equilibrium reaction (b) irreversible reaction (c) principle reaction (d) neutralization reaction. **Ans.** equilibrium reaction.
40. Surface tension vanishes at (a) Reduced temperature (b) Equilibrium point (c) Critical point (d) Inversion point. **Ans.** Critical point.
41. Which is a state function (I) ΔS (II) ΔE (III) ΔG (IV) ΔH (a) except I (b) except II (c) except III (d) all are state functions. **Ans.** all are state functions.
42. Radius of cation to anion in CsCl is (a) 0.93 (b) 0.73 (c) 0.62 (d) 0.25 . **Ans.** 0.93
43. For the reaction $\text{CaCO}_3(\text{s}) \rightleftharpoons \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$, partial pressure of CO_2 at 1000 K is 0.003 atm and ΔG° is 27.2 kcal. The value of ΔG is (a) 20kcal (b) 22 kcal (c) 15.6 kcal (d) 18.8 kcal **Ans.** 15.6 kcal
44. $T\Delta S$ refers to (a) change in disorderness (b) change in free energy (c) work done (d) change in enthalpy **Ans.** work done
45. Sucrose on hydrolysis with HCl gives (a) glucose and fructose (b) glucose only (c) fructose only (d) Maltose only. **Ans.** glucose and fructose.
46. Which of the following is most soluble in water at room temperature? (a) Oxalic acid (b) Benzophenone (c) Benzoic acid (d) n-pentane. **Ans.** Oxalic acid
47. Which is true for ideal gas ? (a) $\left(\frac{\partial E}{\partial P}\right)_T = 0$ (b) $\left(\frac{\partial E}{\partial V}\right)_T = 0$ (c) $\left(\frac{\partial E}{\partial T}\right)_V = 0$ (d) All. **Ans.** $\left(\frac{\partial E}{\partial V}\right)_T = 0$
48. Which is not correctly matched ? (a) BF_3 – Trigonal planar (b) H_2O – linear (c) NH_3 – Pyramidal (d) CCl_4 – Tetrahedral **Ans.** H_2O – linear
49. Chlorate ion is (a) ClO_4^- (b) ClO_3^- (c) ClO_2^- (d) ClO^- . **Ans.** ClO_3^- .
50. Calamine is the ore of (a) Fe (b) Co (c) Zn (d) Sn. **Ans.** Zn.
51. Bauxite is (a) $\text{MnO}_2 \cdot \text{H}_2\text{O}$ (b) $\text{Al}(\text{OH})_3$ (c) $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$ (d) $\text{Fl}_2\text{O}_3 \cdot \text{H}_2\text{O}$. **Ans.** $\text{Al}_2\text{O}_3 \cdot 2\text{H}_2\text{O}$

52. Bleaching powder is prepared from (a) slaked lime with chlorine (b) quick lime (c) slaked lime with NaCl (d) lime stone. **Ans.** slaked lime with chlorine.
53. NH_4Cl dissolves in solution get endothermic. The reason for it is (a) $\Delta G + \text{ve}$ (b) $\Delta H + \text{ve}$ (c) $\Delta S + \text{ve}$ (d) $\Delta S < 0$. **Ans.** $\Delta S + \text{ve}$.
54. For equilibrium condition ΔS is (a) zero (b) +ve (c) -ve (d) all. **Ans.** zero.
55. LiAlH_4 gives two product with (a) Acetic anhydride (b) Ethanol (c) Ethylacetate (d) Methyl ethanoate. **Ans.** Methyl ethanoate.
56. Most active group in electrophilic substitution reaction is (a) $-\text{NH}_2$ (b) $-\text{NHCOR}$ (c) $-\text{NR}_2$ (d) $-\text{C}_6\text{H}_5$. **Ans.** $-\text{NR}_2$
57. In exothermic reaction (a) $\Delta S_{\text{surr}} > 0$ (b) $\Delta S_{\text{sys}} > 0$ (c) $\Delta S_{\text{sys}} = 0$ (d) $\Delta S_{\text{surr}} = 0$ **Ans.** $\Delta S_{\text{surr}} > 0$
58. The inducer for the reaction $(\text{CH}_3)_2\text{CHCH}=\text{CH}_2 + \text{C}_2\text{H}_5\text{OH}$ is (a) H_2SO_4 (b) P_2O_5 (c) Na_2CO_3 (d) KOH . **Ans.** H_2SO_4 .
59. Work done refers to (a) ΔG change (b) ΔS change (c) ΔH change (d) ΔA change. **Ans.** ΔG change
60. $C_P - C_V = R$, R signifies (a) Rotational energy (b) Mechanical energy (c) Kinetic energy (d) Work done per mole per degree Kelvin. **Ans** Work done per mole per degree Kelvin
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