

NSIT - Sample Paper 1
CHEMISTRY
MEMORY BASED QUESTIONS

1. Air contains 20% O₂ for the reaction $C_2H_5NH_2 + O_2 \longrightarrow CO_2 + NO_2 + H_2O$. How much volume of air will be required for 1 mol of C₂H₅NH₂

- (a) 106.4 L (b) 1064 L (c) 212.8 L (d) 2128 L

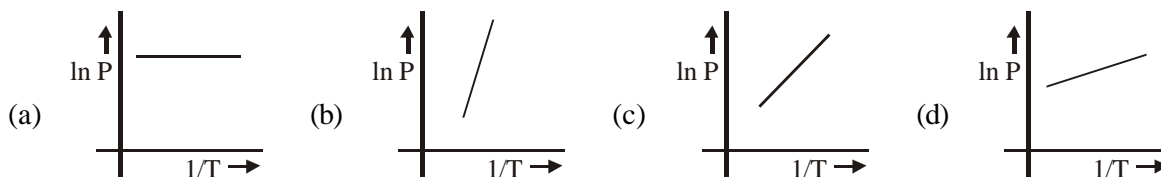
Sol: Ans [b]

2. Oxide of Mn contains 70% of Mn formula of this oxide will be

- (a) Mn₂O₃ (b) MnO (c) Mn₃O₂ (d) Mn₂O

Sol: Ans [a]

3. Following is the curve log P Vs. 1/T for which curve ΔH is more



Sol: Ans [b]

4. Which one is chain-growth polymers

- (a) Teflon (b) Nylon-6 (c) Nylon-66 (d) Bakelite

Sol: Ans [a]

5. Which is likely to show inert-pair effect

- (a) K (b) Mg (c) Al (d) Pb

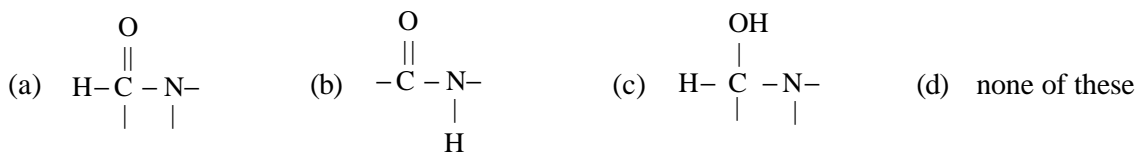
Sol: Ans [d]

6. Which one is basic dye

- (a) orange-I (b) phenolphthalein (c) anthroquinone (d) aniline yellow

Sol: Ans [d]

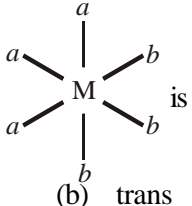
7. Which one is the correct representation of peptide bond



Sol: Ans [b]

8. N_2 accept e^- and convert into N_2^- , where this e^- goes?
- (a) antibonding π molecular orbital (b) bonding π molecular orbital
 (c) σ bonding molecular orbital (d) σ anti-bonding molecular orbital

Sol: Ans [a]

9. Octahedral complex  is
- (a) cis (b) trans (c) mer (d) fac

Sol: Ans [d]

10. A substance under goes nuclear decomposition for its mean-time period ratio of original substance Vs. remaining substance will be
- (a) 1 : 0.72 (b) 1 : 0.50 (c) 1 : 0.62 (d) 1 : 0.30

Sol: Ans [a]

11. C_2H_5OH and C_6H_5OH can be distinguished by
- (a) $Br_2 + H_2O$ (b) $FeCl_3$ (c) $Br_2 + NaOH$ (d) both (b) and (c)

Sol: Ans [d]

12. $X + KCN \longrightarrow CH_3CN \xrightarrow{2H_2/Ni} CH_3CH_2NH_2$, what is (X)
- (a) CH_3CH_2Cl (b) CH_3Cl (c) $CH_3CH_2CH_2Cl$ (d) $(CH_3)_2CHCl$

Sol: Ans [b]

13. For a reaction $\Delta H = (+ 3 \text{ KJ})$, $\Delta S = (+10 \text{ J/K})$ beyond which temperaute this reaction will be spontaneous
- (a) 300 K (b) 200 K (c) 273 K (d) 373 K

Sol: Ans [a]

14. Solubility of $Al(OH)_3 = S$, K_{sp} will be
- (a) $108 S^3$ (b) $27 S^3$ (c) $4 S^4$ (d) $27 S^4$

Sol: Ans [d]

15. Oxidation states of X, Y, Z are + 2, + 5 and - 2 respectively. Formula of the compound formed by these will be
- (a) X_2YZ_6 (b) XY_2Z_6 (c) XY_5 (d) X_3YZ_4

Sol: Ans [b]

16. For a crystal system $a = b = c$ and $\alpha = \beta = \gamma \neq 90^\circ$
- (a) tetragonal (b) hexagonal (c) rhomohedral (d) monoclinic

Sol: Ans [c]

17. At temperature 327°C and concentration C osmotic pressure of a solution is P , the same solutions at concentration $C/2$ and a temperature 427°C shows osmotic pressure 2 atm , value of P will be

- (a) $\frac{12}{7}P$ (b) $\frac{24}{7}P$ (c) $\frac{6}{5}P$ (d) $\frac{5}{6}P$

Sol: Ans [b]

18. Which one is *not correct*

- (a) rate of zero order reaction depends upon initial concentration of reactant
 (b) rate of zero order reaction does not depend upon initial concentration of reactant
 (c) $t_{1/2}$ of first order reaction is independent of initial concentration of reactant
 (d) $t_{1/2}$ of zero order reaction is dependent of initial concentration of reactant

Sol: Ans [a]

19. Molar conductance of electrolytic solution Λ_m is

- (a) $\propto l$ (b) $\propto (1/A)$ (c) $\propto (1/C)$ (d) $\propto (\sqrt{C})$

Sol: Ans [c]

20. In Adsorption rate of physisorption increases when

- (a) temperature is decreased (b) temperature is increased
 (c) pressure is decreased (d) none of these

Sol: Ans [a]

21. In two vessels of 1 litre each at the same temperature 1 g of H_2 and 1 g of CH_4 are taken, for these

- (a) V_{rms} values will be same (b) kinetic energy per/mole will be same
 (c) total kinetic energy will same (d) pressure will be same

Sol: Ans [b]

22. $\text{CH}_3\text{CH}_2\text{CONH}_2 \xrightarrow{\text{X}} \text{CH}_3\text{CH}_2\text{CH}_2\text{NH}_2$, X is

- (a) Pt/H_2 (b) Ni/H_2 (c) LiAlH_4 (d) Zn

Sol: Ans [c]

23. In SiF_6^{2-} and SiCl_6^{2-} which one is known and why

- (a) SiF_6^{2-} because of small size of F (b) SiF_6^{2-} because of large size of F
 (c) SiCl_6^{2-} because of small size of Cl (d) SiCl_6^{2-} because of large size of Cl

Sol: Ans [a]

24. Which reaction is not valid

- (a) $\text{HCl} + \text{F}_2 \longrightarrow \text{HF} + \text{Cl}_2$ (b) $\text{HF} + \text{Cl}_2 \longrightarrow \text{F}_2 + \text{HCl}$
 (c) $\text{Zn} + \text{HCl} \longrightarrow \text{ZnCl}_2 + \text{H}_2$ (d) $\text{Al} + \text{HCl} \longrightarrow \text{AlCl}_3 + \text{H}_2$

Sol: Ans [b]

25. Which one of the following exist in the oxidation state other than +3

- (a) B (b) Al (c) Ce (d) Ga

Sol: Ans [c]

26. Write the IUPAC name of $\text{CH}_3 - \text{O} - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2 - \text{CH}_3$

- (a) 3-methoxy butane (b) 2-methoxy butene
(c) 3-methyl-3-methoxy propane (d) butoxy methane

Sol: Ans [b]

27. Increase order of basic nature in aqous solutions

- (a) $\text{C}_6\text{H}_5\text{NH}_2 > \text{NH}_3 > \text{CH}_3\text{NH}_2 > (\text{CH}_3)_2\text{NH}$
(b) $\text{NH}_3 > \text{C}_6\text{H}_5\text{NH}_2 > \text{CH}_3\text{NH}_2 > (\text{CH}_3)_2\text{NH}$
(c) $(\text{CH}_3)_2\text{NH} > \text{CH}_3\text{NH}_2 > \text{NH}_3 > \text{C}_6\text{H}_5\text{NH}_2$
(d) $\text{CH}_3\text{NH}_2 > (\text{CH}_3)_2\text{NH} > \text{NH}_3 > \text{C}_6\text{H}_5\text{NH}_2$

Sol: Ans [c]

28. Under certain thermodynamic conditions atomic wt of oxygen is 16.7, it contains two isotopes $^{16}_8\text{O}$ and $^{17}_8\text{O}$. Percentage $^{17}_8\text{O}$ isotopes is

- (a) 50 (b) 60 (c) 70 (d) 80

Sol: Ans [c]

29. 40% by weight solution will contain how much mass of the solute in 1 litre solution, density of the solution is 1.2 g/ml

- (a) 480 g (b) 48 g (c) 38 g (d) 380 g

Sol: Ans [a]

30. Which one is *correct*

- (a) molality changes with temperature (b) molality does not change with temperature
(c) molarity does not change with temperature (d) normality does not change with temperature

Sol: Ans [b]

31. Which one is *correct* statements

- (a) basicity of H_3PO_4 and H_3PO_3 is 3 and 3 respectively
(b) acidity of H_3PO_4 and H_3PO_3 is 3 and 3 respectively
(c) acidity of H_3PO_4 and H_3PO_3 is 3 and 2 respectively
(d) basicity of H_3PO_4 and H_3PO_3 is 3 and 2 respectively

Sol: Ans [d]

32. Correct order of decreasing thermal stability is as

- (a) $\text{NH}_3 > \text{PH}_3 > \text{AsH}_3 > \text{SbH}_3$ (b) $\text{PH}_3 > \text{NH}_3 > \text{AsH}_3 > \text{SbH}_3$
 (c) $\text{AsH}_3 > \text{PH}_3 > \text{NH}_3 > \text{SbH}_3$ (d) $\text{SbH}_3 > \text{AsH}_3 > \text{PH}_3 > \text{NH}_3$

Sol: Ans [a]

33. $\text{CaC}_2 + \text{H}_2\text{O} \longrightarrow \text{X} \xrightarrow{\text{O}_3/\text{H}_2\text{O}/\text{H}^+} \text{HCOOH} + \text{HCOOH}$, X is

- (a) C_2H_4 (b) C_2H_2 (c) C_2H_6 (d) Ca(OH)_2

Sol: Ans [b]

34. $\text{C}_6\text{H}_5\text{MgBr} + \text{O}_2 \xrightarrow{\text{heat}} \text{X}$, X is

- (a) C_6H_6 (b) $\text{C}_6\text{H}_5\text{OC}_6\text{H}_5$ (c) $\text{C}_6\text{H}_5\text{OMgBr}$ (d) $\text{C}_6\text{H}_5\text{CHO}$

Sol: Ans [c]

35. Which of the following indicates open chain structure of glucose

- (a) penta-acylate derivative of glucose (b) cyano hydrin formation with HCN
 (c) reaction with Fehling solution (d) reaction with Tollen's reagent

Sol: Ans [a]

36. CH_3COCH_3 and $\text{CH}_3\text{CH}_2\text{CHO}$ can be distinguished by

- (a) FeCl_3 (b) Tollen's reagent (c) NaHSO_3 (d) 2, 4-DNP

Sol: Ans [b]

37. On heating a vessel initially at 300 K to 400 K fraction of volume spilled-over

- (a) $3/4$ (b) $2/4$ (c) $1/4$ (d) $1/5$

Sol: Ans [a]

38. Which do not decolourise KMnO_4 aq. solution

- (a) $\text{C}_2\text{O}_4^{2-}$ (b) HSO_3^- (c) CO_3^{2-} (d) SO_3^{2-}

Sol: Ans [c]

39. Which increases on increase of temperature

- (a) energy of activation (E_a) (b) collision frequency (Z)
 (c) rate constant (k) (d) both (b) and (c)

Sol: Ans [d]

40. Which expression is wrong for first order reaction

- (a) $k = \frac{2.303}{t} \log \left(\frac{A_0}{At} \right)$ (b) $k = \frac{t}{2.303} \log \left(\frac{A_0}{At} \right)$
 (c) $-k = \frac{t}{2.303} \log \left(\frac{At}{A_0} \right)$ (d) rate = k [A]

Sol: Ans [b]

41. Chloramphenicol is

- (a) narrow spectrum antibiotic (b) broad spectrum analgesic
(c) broad spectrum antibiotic (d) broad spectrum antibacterial

Sol: Ans [c]

42. Which one of the following is most basic

- (a) FCH_2NH_2 (b) $\text{FCH}_2\text{CH}_2\text{NH}_2$ (c) $\text{C}_6\text{H}_5\text{NH}_2$ (d) $\text{C}_6\text{H}_5\text{CH}_2\text{NH}_2$

Sol: Ans [d]

43. Which is not the property of ethanenitrile (CH_3CN)

- (a) undergoes acidic hydrolysis to give carboxylic acid
(b) undergoes alkaline hydrolysis to give salt of carboxylic acid
(c) it tautomerises to give methyl iso-cyanide
(d) it gives carbylamine reaction with chloroform

Sol: Ans [d]

