

CHEMISTRY

Test Series for NEET Students

Test No. : 04/24

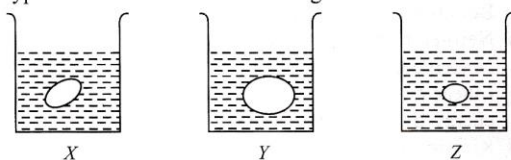
By Khare Sir

SECTION - A

- 1 Study the orbital diagrams of two atoms 'X' and 'Y'. Which subshell will be more stable and why?



- (a) X, exchange energy is maximum, so is stability.
 (b) Y, exchange energy is maximum, so is stability.
 (c) X, exchange energy is minimum, so stability is maximum.
 (d) Y, exchange energy is minimum, so stability is maximum.
- 2 Grapes placed in three beakers X, Y and Z containing different type of solutions are shown in figures.



If beaker X contains water, then Y and Z contain

- (a) Y - hypotonic solution, Z - hypertonic solution
 (b) Y - hypertonic solution, Z - hypotonic solution
 (c) Y and Z - isotonic solutions
 (d) Y and Z - hypotonic solutions
- 3 *p*-Nitrophenol is a stronger acid than phenol while *p*-cresol is a weaker acid. This can be explained as
- (a) $-\text{CH}_3$ group decreases the electron density on oxygen of $-\text{OH}$ group making *p*-cresol a weaker acid
 (b) $-\text{NO}_2$ group decreases the electron density on oxygen of $-\text{OH}$ group making *p*-nitrophenol a stronger acid
 (c) $-\text{CH}_3$ group increases the electron density on oxygen of $-\text{OH}$ group making release of H^+ easier
 (d) $-\text{NO}_2$ group increases the electron density on oxygen of $-\text{OH}$ group making release of H^+ easier.

- 4 Match the column I with column II and mark the appropriate choice.

Column I		Column II	
(A)	Nucleoside	(i)	Sugar + base + phosphoric acid group
(B)	Nucleotide	(ii)	Cytosine + uracil
(C)	DNA	(iii)	Sugar + base
(D)	RNA	(iv)	Cytosine + thymine

- (a) (A) \rightarrow (iii), (B) \rightarrow (i), (C) \rightarrow (iv), (D) \rightarrow (ii)
 (b) (A) \rightarrow (i), (B) \rightarrow (iv), (C) \rightarrow (iii), (D) \rightarrow (ii)
 (c) (A) \rightarrow (ii), (B) \rightarrow (iii), (C) \rightarrow (i), (D) \rightarrow (iv)
 (d) (A) \rightarrow (iv), (B) \rightarrow (ii), (C) \rightarrow (i), (D) \rightarrow (iii)

- 5 A ball of mass 200 g is moving with a velocity of 10 m sec^{-1} . If the error in measurement of velocity is 0.1%, the uncertainty in its position is

- (a) 3.32×10^{-31} m (b) 3.34×10^{-27} m
 (c) 5.32×10^{-25} m (d) 2.64×10^{-32} m

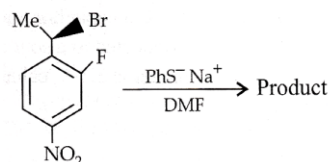
- 6 Bromobenzene boils at 429.8 K and its enthalpy of vaporisation at this temperature is 241.9 kJ/kg. The change in entropy during evaporation of 10 kg of bromobenzene at its boiling point is
 (a) 2.36 kJ K^{-1} (b) 4.83 kJ K^{-1}
 (c) 5.63 kJ K^{-1} (d) 3.21 kJ K^{-1}

- 7 Choose the correct statement about the nature of Si—O bond in silicates.
 (a) Si—O bond is purely ionic in nature.
 (b) Si—O bond is purely covalent in nature.
 (c) Si—O bond is metallic in nature.
 (d) Si—O bond is 50% covalent and 50% ionic in nature.

- 8 Given below are few statements. Mark the statement which is not correct.

- (a) Gram atomic mass of an element may be defined as the mass of Avogadro's number of atoms.
 (b) The molecular mass of a diatomic elementary gas is twice its atomic mass.
 (c) Gay Lussac's law of chemical combination is valid for all substances.
 (d) A pure compound has always a fixed proportion of masses of its constituents.

- 9 Identify the major product of the following reaction.



- (a) (b)
 (c) (d)

- 10 Select the correct statement regarding detection of copper.
 (a) Cuprous ions give chocolate coloured precipitate with $\text{K}_3[\text{Fe}(\text{CN})_6]$.
 (b) Cupric ions give chocolate coloured precipitate with $\text{K}_3[\text{Fe}(\text{CN})_6]$.
 (c) Cuprous ions give chocolate coloured precipitate with $\text{K}_4[\text{Fe}(\text{CN})_6]$.
 (d) Cupric ions give chocolate coloured precipitate with $\text{K}_4[\text{Fe}(\text{CN})_6]$.

- 11 Ethyl ester $\xrightarrow[\text{Excess}]{\text{CH}_3\text{MgBr}}$ P

The product P is

- (a) (b)
 (c) (d)

- 12 X and Y are the two elements which form X_2Y_3 and X_3Y_4 . If 0.20 mol of X_2Y_3 weighs 32.0 g and 0.4 mol of X_3Y_4 weighs 92.8 g. The atomic masses of X and Y respectively are
 (a) 16.0 u and 56.0 u (b) 8.0 u and 28.0 u
 (c) 56.0 u and 16.0 u (d) 28.0 u and 8.0 u

- 13 Sometimes yellow turbidity appears while passing H_2S gas even in the absence of group II radicals. This is because of
 (a) sulphur is present in the mixture as impurity
 (b) group IV radicals are precipitated as sulphides
 (c) the oxidation of H_2S gas by some acid radicals
 (d) group III radicals are precipitated as hydroxides.

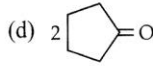
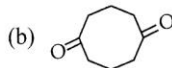
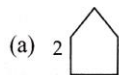
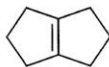
- 14 The magnetic properties and geometries of $[Ni(CN)_4]^{2-}$ and $[NiCl_4]^{2-}$ respectively are
 (a) diamagnetic, paramagnetic and tetrahedral, square planar
 (b) paramagnetic, diamagnetic and tetrahedral, square planar
 (c) paramagnetic, diamagnetic and square planar, tetrahedral
 (d) diamagnetic, paramagnetic and square planar, tetrahedral.

- 15 **Assertion :** For the equilibrium mixture $CO_{(g)} + 3H_{2(g)} \rightleftharpoons CH_{4(g)} + H_2O_{(g)}$ if the volume is decreased, reaction proceeds in the forward direction.

Reason : For the methanation reaction (above), decrease in volume causes $Q_c > K_c$.

- (a) If both assertion and reason are true and reason is the correct explanation of assertion.
 (b) If both assertion and reason are true but reason is not the correct explanation of assertion.
 (c) If assertion is true but reason is false.
 (d) If both assertion and reason are false.

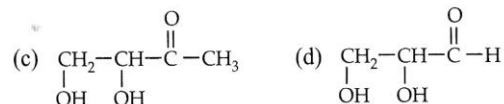
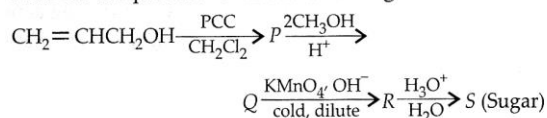
- 16 Ozonolysis of the following compound gives



- 17 The correct order of boiling points of hydrogen halide is

- (a) $HF > HCl > HBr > HI$
 (b) $HI > HBr > HCl > HF$
 (c) $HF > HI > HBr > HCl$
 (d) $HCl > HF > HI > HBr$

- 18 Find out the product 'S' in the following series of reactions.



- 19 Vapour pressure of chloroform ($CHCl_3$) and dichloromethane (CH_2Cl_2) at 298 K are 200 mm Hg and 415 mm Hg respectively. The vapour pressure of the solution prepared by mixing 25.5 g of $CHCl_3$ and 40 g of CH_2Cl_2 at 298 K is

- (a) 221.09 mm Hg (b) 347.9 mm Hg
 (c) 312.88 mm Hg (d) 268.07 mm Hg

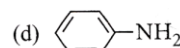
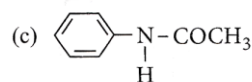
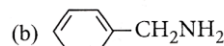
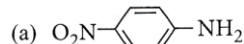
- 20 Chlorine oxidises sodium thiosulphate to form

- (a) Na_2SO_3 (b) Na_2O
 (c) Na_2SO_4 (d) Na_2CO_3

- 21 The reaction of aqueous $KMnO_4$ with H_2O_2 in acidic conditions gives

- (a) Mn^{4+} and O_2 (b) Mn^{2+} and O_2
 (c) Mn^{2+} and O_3 (d) Mn^{4+} and MnO_2 .

- 22 Which of the following compounds is most basic?



- 23 The EMF of a galvanic cell by coupling two electrodes $M_1 | M_1^{2+} (0.1 M) || M_2^{2+} (0.01 M) | M_2$ is + 1.47 V. If the E° value (reduction potential) of M_2 electrode is 0.9 V, E° (reduction potential) value of M_1 electrode in volts would be

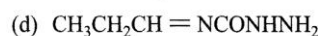
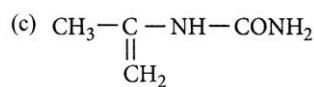
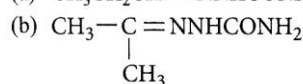
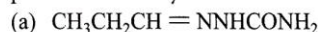
$$\left[\text{Assume, } \frac{2.303RT(T = 298 K)}{F} = 0.06 \right]$$

- (a) - 0.57 (b) - 0.60
 (c) + 0.57 (d) + 0.60

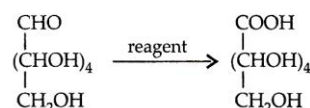
- 24 The strength of E—O bond (where E = Si, P, S, Cl) follows the order

- (a) $Si-O > P-O > Cl-O < S-O$
 (b) $S-O > P-O > Si-O > Cl-O$
 (c) $Cl-O > S-O > P-O > Si-O$
 (d) $P-O > S-O > Cl-O < Si-O$

- 25 Compound A (molecular formula C_3H_8O) is treated with acidified potassium dichromate to form a product B (molecular formula C_3H_6O). B forms a shining silver mirror on warming with ammoniacal silver nitrate. B when treated with an aqueous solution of $H_2NCONHNH_2$, HCl and sodium acetate gives a product C. Identify the structure of C.

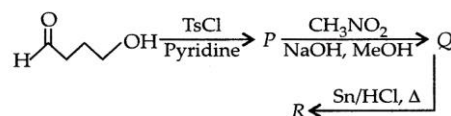


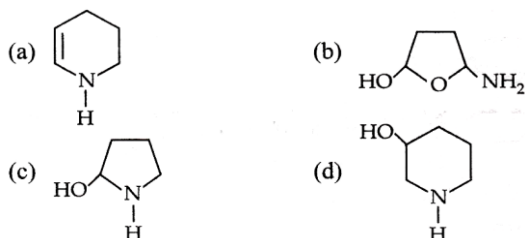
- 26 The reagent which does not bring about the following conversion is



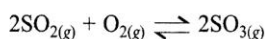
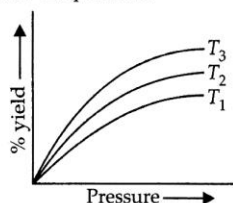
- (a) dil. HNO_3
 (b) Br_2/H_2O
 (c) Fehling's solution
 (d) Tollens' reagent.

- 27 Identify 'R' in the following series of reactions.



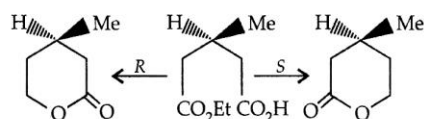


- 28 Percentage yield of the following reaction is plotted against pressure at a definite temperature.



Which of the following relations is correct?

- (a) $T_1 > T_2 > T_3$ (b) $T_3 > T_2 > T_1$
 (c) $T_1 = T_2 = T_3$ (d) $T_1 > T_2 < T_3$
- 29 Which one of the following elements is unable to form MF_6^{3-} ion?
 (a) Ga (b) Al (c) B (d) In
- 30 Potassium permanganate has intense purple colour due to
 (a) weak $d-d$ transitions
 (b) metal to ligand charge transfer
 (c) ligand to metal charge transfer
 (d) both metal and ligand transitions.
- 31 Identify R and S in the following reaction.







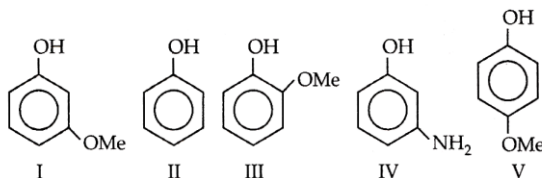
- (a) $R = \text{LiAlH}_4$, $S = \text{NaBH}_4$
 (b) $R = \text{BH}_3/\text{THF}$, $S = \text{LiAlH}_4$
 (c) $R = \text{LiBH}_4$, $S = \text{BH}_3/\text{THF}$
 (d) $R = \text{LiBH}_4$, $S = \text{NaBH}_4$
- 32 In a first order reaction, $R \rightarrow Q$, if ' k ' is the rate constant and initial concentration of the reactant R is 0.5 M, then the half-life is
 (a) $\frac{\log 2}{k}$ (b) $\frac{\log 2}{k\sqrt{0.5}}$ (c) $\frac{\ln 2}{k}$ (d) $\frac{0.693}{0.5 k}$
- 33 Which of the following represents the correct order of increasing electron gain enthalpy with negative sign for the elements O, S, F and Cl?
 (a) $\text{O} < \text{S} < \text{F} < \text{Cl}$ (b) $\text{F} < \text{S} < \text{O} < \text{Cl}$
 (c) $\text{S} < \text{O} < \text{Cl} < \text{F}$ (d) $\text{Cl} < \text{F} < \text{O} < \text{S}$
- 34 To a certain volume of a weak monobasic acid, when 20 mL of NaOH solution is added, pH of the resulting solution was found to be 3.7 whereas when 30 mL of the same NaOH is added to the same volume of the acid from same stock, pH was found to be 4.18. K_a of the acid is
 (a) 3×10^4 (b) 2×10^{-4}
 (c) 3×10^{-4} (d) 2×10^4
- 35 Find the incorrect match among the following.
 (a) XeF_4 ; square planar
 (b) XeO_4 ; tetrahedral
 (c) XeOF_4 ; octahedral
 (d) XeO_3F_2 ; trigonal bipyramidal

Section-B

- 36 Which among the following compounds are aromatic in nature?



- (a) II, IV, VI (b) II, III, V
 (c) II, IV, V (d) All are aromatic.
- 37 The value of ΔG° for phosphorylation of glucose in glycolysis is 13.8 kJ/mol. The value of K_c at 298 K is
 (a) $e^{-5.569}$ (b) 3.81×10^{-3}
 (c) 2.65×10^{-2} (d) both (a) and (b).
- 38 Which of the following will be most acidic?
 (a)  (b) 
 (c)  (d) 
- 39 Which one of the following is incorrect for ideal solution?
 (a) $\Delta H_{\text{mix}} = 0$
 (b) $\Delta U_{\text{mix}} = 0$
 (c) $\Delta P = P_{\text{obs}} - P_{\text{calculated by Raoult's law}} = 0$
 (d) $\Delta G_{\text{mix}} = 0$
- 40 Reactivity order of halides for dehydrohalogenation is
 (a) $R-F > R-Cl > R-Br > R-I$
 (b) $R-I > R-Br > R-Cl > R-F$
 (c) $R-I > R-Cl > R-Br > R-F$
 (d) $R-F > R-I > R-Br > R-Cl$
- 41 4 g of a mixture of calcium carbonate and sand is treated with excess of hydrochloric acid, and 0.880 g of CO_2 is produced. What is the percentage of CaCO_3 in the original mixture?
 (a) 30% (b) 40% (c) 50% (d) 60%
- 42 Choose the correct order of increasing acidic strength of the following compounds.



- (a) $\text{I} > \text{IV} > \text{II} > \text{III} > \text{V}$ (b) $\text{I} > \text{IV} > \text{V} > \text{II} > \text{III}$
 (c) $\text{IV} > \text{V} > \text{II} > \text{I} > \text{III}$ (d) $\text{II} > \text{IV} > \text{I} > \text{V} > \text{III}$

- 43 If electron, hydrogen, helium and neon nuclei are all moving with the velocity of light, then the wavelengths associated with these particles are in the order
 (a) electron > hydrogen > helium > neon
 (b) electron > helium > hydrogen > neon
 (c) electron < hydrogen < helium < neon
 (d) neon < hydrogen < helium < electron
- 44 The standard electrode potentials for $\text{Pb}^{2+}|\text{Pb}$ and $\text{Zn}^{2+}|\text{Zn}$ are -0.126 V and -0.763 V respectively. The e.m.f. of the cell $\text{Zn} | \text{Zn}^{2+}(0.1 \text{ M}) || \text{Pb}^{2+}(0.1 \text{ M}) | \text{Pb}$ is
 (a) 0.637 V (b) < 0.637 V
 (c) > 0.637 V (d) 0.889 V
- 45 A certain metal when irradiated by light ($\nu = 3.2 \times 10^{16}$ Hz) emits photoelectrons with twice $K.E.$ as did photoelectrons when the same metal is irradiated by light ($\nu = 2.0 \times 10^{16}$ Hz). The ν_0 of the metal is
 (a) 1.2×10^{14} Hz (b) 8×10^{15} Hz
 (c) 1.2×10^{16} Hz (d) 4×10^{12} Hz.

46 Small quantities of solution of compounds, TX, TY and TZ are put into separate test tubes containing X, Y and Z solutions. TX does not react with any of these. TY reacts with both X and Z. TZ reacts only with X. The decreasing order of ease of oxidation of the anions, X⁻, Y⁻ and Z⁻ is

- (a) Y⁻, Z⁻, X⁻ (b) Z⁻, X⁻, Y⁻
 (c) Y⁻, X⁻, Z⁻ (d) X⁻, Z⁻, Y⁻

47 Though SF₄ undergoes hydrolysis very easily but SF₆ does not. This is due to

- (a) unreactivity of SF₆ and more reactivity of SF₄
 (b) SF₄ have vacant *d*-orbital whereas SF₆ does not
 (c) water is a poor nucleophile in hydrolysis reaction
 (d) due to steric crowding around sulphur atom in SF₆.

48 Which of the following statements is not true about glucose?

- (a) It is an aldohexose.
 (b) On heating with HI it forms *n*-hexane.
 (c) It is present in furanose form.
 (d) It does not give 2,4-DNP test.

49 Lucas reagent is

- (a) conc. HCl and anhydrous ZnCl₂
 (b) conc. HNO₃ and hydrous ZnCl₂
 (c) conc. HCl and hydrous ZnCl₂
 (d) conc. HNO₃ and anhydrous ZnCl₂.

50 Consider the following reactions and find out X and Y respectively.

