NEET 2019

05th MAY

Chemistry Video Solution & Discussion

MATRIX

NEET | JEE Main & Advanced | XI-XII Foundation| VI-X Pre-Foundation

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46. Under isothermal condition, a gas at 300 K expands from 0.1L to 0.25L against a constant external pressure of 2 bar. The work done by the gas is :- [Given that 1L bar = 100 J]

(1) –30 J (2) 5kJ (3) 25 J (4) 30 J

Answer (1)

47. A compound is formed by cation C and anion A. The anions form hexagonal close packed (hcp) lattice and the cations occupy 75% of octahedral voids. The formula of the compound is :-

(1) C_2A_3 (2) C_3A_2 (3) C_3A_4 (4) C_4A_3

Answer (3)

48. pH of a saturated solution of $Ca(OH)_2$ is 9. The solubility product (K_{sp}) of $Ca(OH)_2$ is :-

(1) 0.5×10^{-15} (2) 0.25×10^{-10} (3) 0.125×10^{-15} (4) 0.5×10^{-10}

Answer (1)

49. The number of moles of hydrogen molecules required to produce 20 moles of ammonia through Haber's process is :-

(1) 10 (2) 20 (3) 30 (4) 40

Answer (3)

50. For an ideal solution, the **correct** option is :-

(1) $\Delta_{mix} S = 0$ at constant T and P (2) $\Delta_{mix} V \neq 0$ at constant T and P

(3) $\Delta_{mix} H = 0$ at constant T and P (4) $\Delta_{mix} G = 0$ at constant T and P

Answer (3)

51. For a cell involving one electron $E^{\Theta}_{cell} = 0.59V$ at 298 K, the equilibrium constant for the cell reaction is :-

[Given that $\frac{2.303RT}{F} 0.059V$ at T 298K]

(1) 1.0×10^2 (2) 1.0×10^5 (3) 1.0×10^{10} (4) 1.0×10^{30}

Answer (3)

52. Among the following, the one that is **not** a green house gas is :-

(1) Nitrous oxide (2) Methane (3) Ozone (4) Sulphur dioxide

Answer (4)

53. The number of sigma (σ) and pi (π) bonds in pent-2-en-4-yne is :-

(1) 10 σ bonds and 3π bonds (2) 8 σ bonds and 5π bonds

(3) 11 σ bonds and 2π bonds (4) 13 σ bonds and no π bond

Answer (1)

54. Which of the following diatomic molecular species has only π bonds according to Molecular Orbital Theory ?

(1) O_2 (2) N_2 (3) C_2 (4) Be_2

Answer (3)

55. Which of the following reactions are disproportionation reaction ?

(a) $2Cu^+ \rightarrow Cu^{2+} + Cu^0$

(b) $3MnO_4^{2-} + 4H^+ \rightarrow 2MnO_4^- + MnO_2 + 2H_2O$

(c) $2KMnO_4 \xrightarrow{\Delta} K_2MnO_4 + MnO_2 + O_2$

(d) $2MnO_4^- + 3Mn^{2+} + 2H_2O \rightarrow 5MnO_2 + 4H^{\oplus}$

Select the **correct** option from the following :-

(1) (a) and (b) only (2) (a), (b) and (c) (3) (a), (c) and (d) (4) (a) and (d) only

Answer (1)

56. Among the following, the narrow spectrum antibiotic is :-

(1) Penicillin G (2) Ampicillin (3) Amoxycillin (4) Chloramphenicol

Answer (1)

57. The **correct** order of the basic strength of methyl substituted amines in aqueous solution is :-

(1) $(CH_3)_2NH > CH_3NH_2 > (CH_3)_3N$ (2) $(CH_3)_3N > CH_3NH_2 > (CH_3)_2NH$

(3) $(CH_3)_3N > (CH_3)_2NH > CH_3NH_2$ (4) $CH_3NH_2 > (CH_3)_2NH > (CH_3)_3N$

Answer (1)

58. Which mixture of the solutions will lead to the formation of negatively charged colloidal [AgI] I^- solution ?

(1) 50 mL of 1M $AgNO_3$ + 50 mL of 1.5 M KI

(2) 50 mL of 1M $AgNO_3$ + 50 mL of 2 M KI

(3) 50 mL of 2 M $AgNO_3$ + 50 mL of 1.5 M KI

(4) 50 mL of 0.1 M $AgNO_3$ + 50 mL of 0.1 M KI

Answer (1,2)

59. Conjugate base for Bronsted acids H_2O and HF are:-

(1) OH^- and H_2F^+ respectively (2) H_3O^+ and F^-, respectively

(3) OH^- and F^-, respectively (4) H_3O^+ and H_2F^+, respectively

Answer (3)

60. Which will make basic buffer ?

(1) 50 mL of 0.1 M NaOH + 25 mL of 0.1 M CH_3COOH

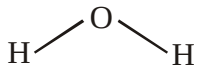
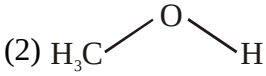
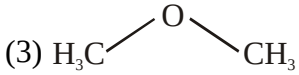
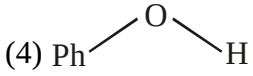
(2) 100 mL of 0.1 M CH_3COOH + 100 mL of 0.1M NaOH

(3) 100 mL of 0.1 M HCl + 200 mL of 0.1 M NH_4OH

(4) 100 mL of 0.1 M HCl + 100 mL of 0.1 M NaOH

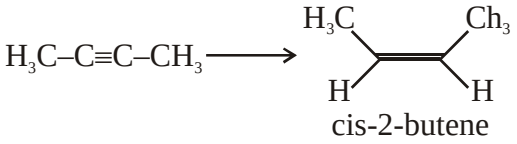
Answer (3)

61. The compound that is most difficult to protonate is:-

(1)  (2)  (3)  (4) 

Answer (4)

62. The most suitable reagent for the following conversion is :-



cis-2-butene

(1) Na/liquid NH_3 (2) H_2, Pd/C, quinoline (3) Zn/HCl (4) Hg^{2+}/H^+, H_2O

Answer (2)

63. Which of the following species is **not** stable ?

(1) $[SiF_6]^{2-}$ (2) $[GeCl_6]^{2-}$ (3) $[Sn(OH)_6]^{2-}$ (4) $[SiCl_6]^{2-}$

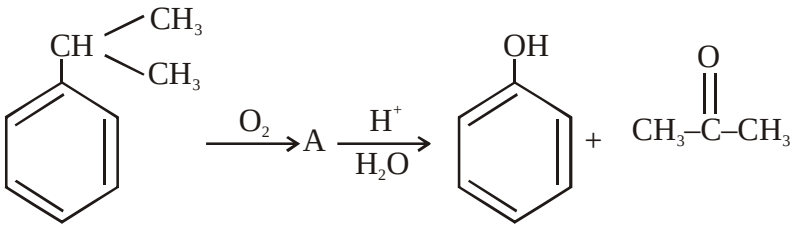
Answer (4)

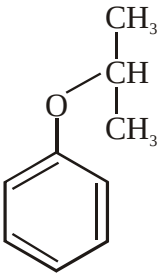
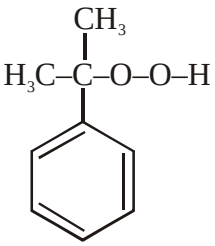
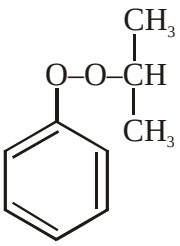
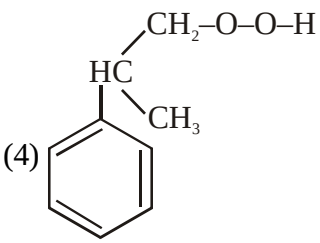
64. Which of the following is an amphoteric hydroxide?

(1) $Sr(OH)_2$ (2) $Ca(OH)_2$ (3) $Mg(OH)_2$ (4) $Be(OH)_2$

Answer (4)

65. The structure of intermediate A in the following reaction is :-



(1)  (2)  (3)  (4) 

Answer (2)

66. The manganate and permanganate ions are tetrahedral, due to

(1) The π bonding involves overlap of p-orbitals of oxygen with d-orbitals of manganese

(2) There is no π bonding

(3) The π bonding involves overlap of p-orbitals of oxygen with p-orbitals of managanese

(4) The π bonding involves overlap of d-orbitals of oxygen with d-orbitals of manganese

Answer (1)

67. For the second period elements the **correct** increasing order of first ionisation enthalpy is :-

(1) Li < Be < B < C < N < O < F < Ne (2) Li < B < Be < C < O < N < F < Ne

(3) Li < B < Be < C < N < O < F < Ne (4) Li < Be < B < C < O < N < F < Ne

Answer (2)

68. If the rate constant for a first order reaction is k, the time (t) required for the completion of 99% of the reaction is given by :-

(1) t = 0.693/k (2) t = 6.909/k (3) t = 4.606/k (4) t = 2.303/k

Answer (3)

69. Identify the **incorrect** statement related to PCl_5 from the following :-

(1) Three equatorial P–Cl bonds make an angle of 120° with each other

(2) Two axial P–Cl bonds make an angle of 180° with each other

(3) Axial P–Cl bonds are longer than equatorial P–Cl bonds

(4) PCl_5 molecule is non–reactive

Answer (4)

70. 4d, 5p, 5f and 6p orbitals are arranged in the order of decreasing energy. The **correct** option is :-

(1) 5f > 6p > 5p > 4d (2) 6p > 5f > 5p > 4d (3) 6p > 5f > 4d > 5p (4) 5f > 6p > 4d > 5p

Answer (1)

71. The biodegradable polymer is :-

(1) Nylon–6,6 (2) Nylon 2–nylon 6 (3) Nylon–6 (4) Buna–S

Answer (2)

72. Match the Xenon compounds in Column–I with its structure in Column–II and assign the correct code:-

Column–I	**Column–II**
(a) XeF_4	(i) Pyramidal
(b) XeF_6	(ii) Square planar
(c) $XeOF_4$	(iii) Distorted octahedral
(d) XeO_3	(iv) Square pyramidal

Code :

	(a)	**(b)**	**(c)**	**(d)**
(1)	(i)	(ii)	(iii)	(iv)
(2)	(ii)	(iii)	(iv)	(i)
(3)	(ii)	(iii)	(i)	(iv)
(4)	(iii)	(iv)	(i)	(ii)

Answer (2)

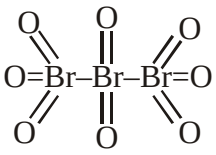
73. Which is the **correct** thermal stability order for H_2E (E=O, S, Se, Te and Po) ?

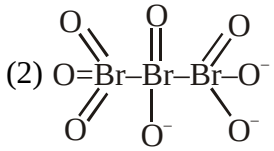
(1) $H_2S < H_2O < H_2Se < H_2Te < H_2Po$ (2) $H_2O < H_2S < H_2Se < H_2Te < H_2Po$

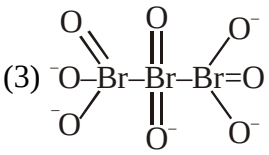
(3) $H_2Po < H_2Te < H_2Se < H_2S < H_2O$ (4) $H_2Se < H_2Te < H_2Po < H_2O < H_2S$

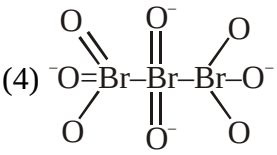
Answer (3)

74. The correct structure of tribromooctaoxide is :-

(1) 

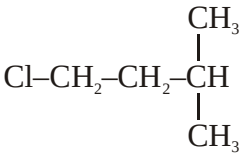
(2) 

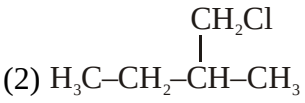
(3) 

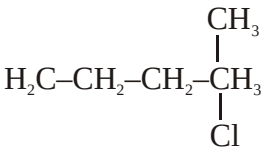
(4) 

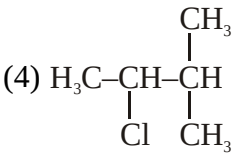
Answer (1)

75. An alkene "A" on reaction with O_3 and $Zn–H_2O$ gives propanone and ethanal in equimolar ratio. Addition of HCl to alkene "A" gives "B" as the major product. The structure of product "B" is :-

(1) 

(2) 

(3) 

(4) 

Answer (3)

76. Enzymes that utilize ATP in phosphate transfer require an alkaline earth metal (M) as the cofactor. M is :

(1) Be (2) Mg (3) Ca (4) Sr

Answer (2)

77. Which one is malachite from the following ?

(1) $CuFeS_2$ (2) $Cu(OH)_2$ (3) Fe_3O_4 (4) $CuCO_3.Cu(OH)_2$

Answer (4)

78. Which of the following series of transitions in the spectrum of hydrogen atom falls in visible region ?

(1) Lyman series (2) Balmer series (3) Paschen series (4) Brackett series

Answer (2)

79. The mixture that forms maximum boiling azeotrope is :

(1) Water + Nitric acid (2) Ethanol + Water

(3) Acetone + Carbon disulphide (4) Heptane + Octane

Answer (1)

80. For the cell reaction

$2Fe^{3+}(aq) + 2I^{-}(aq) \rightarrow 2Fe^{2+}(aq) + I_2(aq)$

$E^{\Theta}_{cell} = 0.24V$ at 298 K. The standard Gibbs energy $\left(\Delta^{o}_{r}G^{\Theta}\right)$ of the cell reaction is :

[Given that Faraday constant F = 96500 C mol^{-1}]

(1) –V 46.32 kJ mol^{-1} (2) – 23.16 kJ mol^{-1} (3) 46.32 kJ mol^{-1} (4) 23.16 kJ mol^{-1}

Answer (1)

81. In which case change in entropy is negative ?

(1) Evaporation of water

(2) Expansion of a gas at constant temperature

(3) Sublimation of solid to gas

(4) $2H(g) \rightarrow H_2(g)$

Answer (4)

82. Match the following :

(a) Pure nitrogen	(i) Chlorine
(b) Haber process	(ii) Sulphuric acid
(c) Contact process	(iii) Ammonia
(d) Deacon's process	(iv) Sodium azide or Barium azide

Which of the following is the **correc**t option ?

	(a)	**(b)**	**(c)**	**(d)**
(1)	(i)	(ii)	(iii)	(iv)
(2)	(ii)	(iv)	(i)	(iii)
(3)	(iii)	(iv)	(ii)	(i)
(4)	(iv)	(iii)	(ii)	(i)

Answer (4)

83. Which of the following is **incorrect** statement ?

(1) PbF_4 is covalent in nature

(2) $SiCl_4$ is easily hydrolysed

(3) GeX_4 (X = F, Cl, Br, I) is more stable than GeX_2

(4) SnF_4 is ionic in nature

Answer (1)

84. The non-essential amino acid among the following is :

(1) Valine (2) Leucine (3) Alanine (4) Lysine

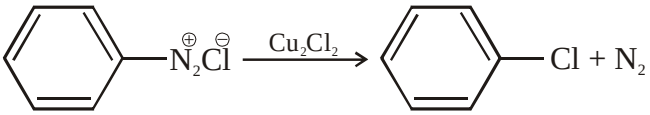
Answer (3)

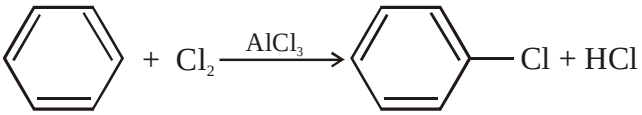
85. A gas at 350 K and 15 bar has molar volume 20 percent smaller than that for an ideal gas under the same conditions. The **correct** option about the gas and its compressibility factor (Z) is :

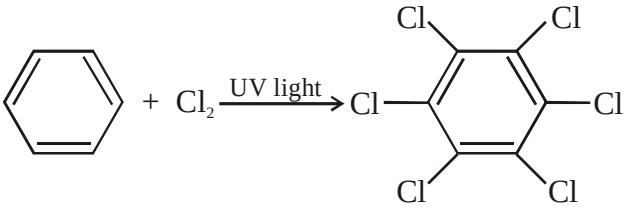
(1) Z > 1 and attractive forces are dominant
(2) Z > 1 and repulsive forces are dominant
(3) Z < 1 and attractive forces are dominant
(4) Z < 1 and repulsive forces are dominant

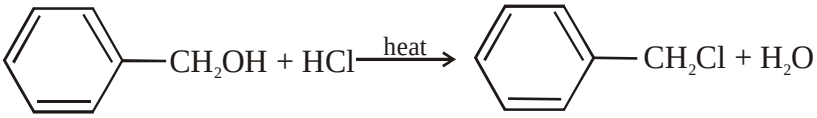
Answer (3)

86. Among the following, the reaction that proceeds through an electrophilic substitution is :

(1) 

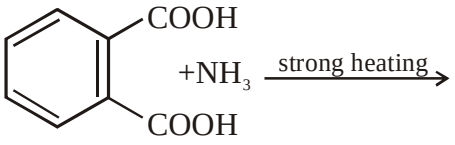
(2) 

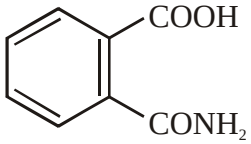
(3) 

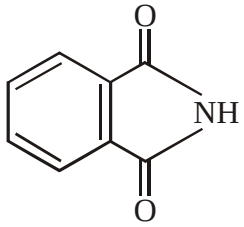
(4) 

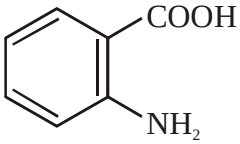
Answer (2)

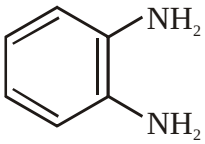
87. The major product of the following reaction is :



(1) 

(2) 

(3) 

(4) 

Answer (2)

88. For the chemical reaction

$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

the correct option is :

(1) $-\frac{1}{3}\frac{d[H_2]}{dt} = -\frac{1}{2}\frac{d[NH_3]}{dt}$
(2) $-\frac{d[N_2]}{dt} = 2\frac{d[NH_3]}{dt}$
(3) $-\frac{d[N_2]}{dt} = \frac{1}{2}\frac{d[NH_3]}{dt}$
(4) $3\frac{d[H_2]}{dt} = 2\frac{d[NH_3]}{dt}$

Answer (3)

89. What is the correct electronic configuration of the central atom in $K_4[Fe(CN)_6]$ based on crystal field theory?

(1) $t_{2g}^4 e_g^2$ (2) $t_{2g}^6 e_g^0$ (3) $e_g^3 t_{2g}^3$ (4) $e_g^4 t_{2g}^2$

Answer (2)

90. The method used to remove temporary hardness of water is :

(1) Calgon's method (2) Clark's method

(3) Ion-exchange method (4) Synthetic resins method

Answer (2)