47

NEET 2025

Chemistry

46. If the molar conductivity ($\wedge_m$) of a 0.050 mol L^{-1} solution of a monobasic weak acid is 90 S cm^2 mol^{-1}, its extent (degree) of dissociation will be

[Assume $\wedge_+^0 = 349.6$ S cm^2 mol^{-1} and $\wedge_-^0 = 50.4$ S cm^2 mol^{-1}

(1) 0.215 (2) 0.115

(3) 0.125 (4) 0.225

47. Given below are two statements :

Statement I : A hypothetical diatomic molecule with bond order zero is quite stable.

Statement II : As bond order increases, the bond length increases.

In the light of the above statements. choose the most appropriate answer from the options given below :

(1) Statement I is false but Statement II is true

(2) Both Statement I and Statement II are true

(3) Both Statement I and Statement II are false

(4) Statement I is true but Statement II is false

48. The ratio of the wavelengths of the light absorbed by a Hydrogen atom when it undergoes n = 2 → n = 3 and n = 4 → n = 6 transitions, respectively, is

(1) $\frac{1}{4}$ (2) $\frac{1}{36}$

(3) $\frac{1}{16}$ (4) $\frac{1}{9}$

49. The correct order of the wavelength of light absorbed by the following complexes is,

A. $[Co(NH_3)_6]^{3+}$ **B.** $[Co(CN)_6]^{3-}$

C. $[Co(H_2O)_4]^{2+}$ **D.** $[Ti(H_2O)_6]^{3+}$

Choose the correct answer from the options given below:

(1) C < A < D < B (2) B < D < A < C

(3) B < A < D < C (4) C < D < A < B

50. If the rate constant of a reaction is 0.03 s^{-1}, how much time does it take for 7.2 mol L^{-1} concentration of the reactant to get reduced to 0.9 mol L^{-1}?

(Given: log 2 = 0.301)

(1) 21.0s (2) 69.3 s

(3) 23.1 s (4) 210 s

51. Match List I with List II

	List-I (Mixture)		List-II (Method of Separation)
A.	$CHCl_3$ + $C_6H_5NH_2$	**I.**	Distillation under reduced pressure
B.	Crude oil in petroleum industry	**II.**	Steam distillation
C.	Glycerol from spent-lye	**III.**	Fractional distillation
D.	Aniline - water	**IV.**	Simple distillation

Choose the correct answer given below :

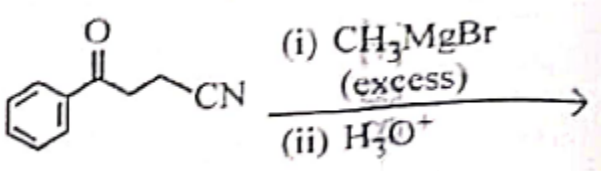
(1) A-III, B-IV, C-II, D-I

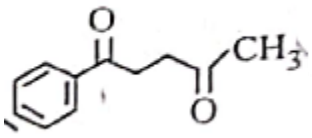
(2) A-IV, B-III, C-I, D-II

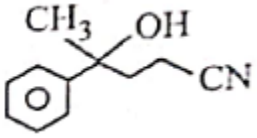
(3) A-IV, B-III, C-II, D-I

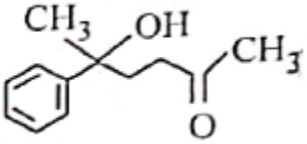
(4) A-III, B-IV; C-I, D-II

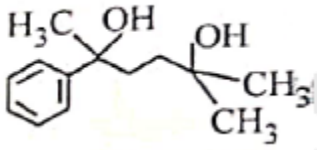
52. The major product of the following reaction is :



(1) 

(2) 

(3) 

(4) 

53. Which one of the following compounds can exist as cis-trans isomers?

(1) 1,2-Dimethylcyclohexane
(2) Pent-1-ene
(3) 2-Methylhex-2-ene
(4) 1,1 -Dimethylcyclopropane

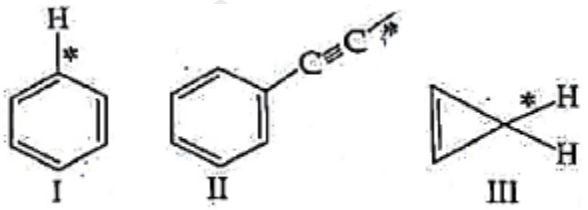
54. Among the following, choose the ones with equal number of atoms::-

A. 212 g of Na_2CO_3(s) [molar mass =106 g]
B. 248 g of Na_2O (s) [molar mass = 62 g]
C. 240 g of NaOH (s) [molar mass = 40 g]
D. 12 g of H_2(g) [molar mass = 2 g]
E. 220 g of CO_2(g) [molar mass = 44 g]

Choose the correct answer from the options given below.:

(1) B, D, and E only
(2) A, B, and C only
(3) A, B, and D only
(4) B, C, and D only

55. Among the given compounds I-III, the correct order of bond dissociation energy of C – H bond marked with * is



(1) II > III > I (2) II > I > III
(3) I > II > III (4) III > II > I

56. The standard heat of formation, in kcal/mol of Ba^{2+} is [Given : standard heat of formation of SO_4^{2-} ion(aq) = – 216 kcal/mol, standard heat of crystallisation of $BaSO_4$(s) = – 4.5 kcal/mol, standard heat of formation of $BaSo_4$(s) = – 349 kcal/mol]

(1) + 220.5 (2) – 128.5
(3) – 133.0 (4) 133.0

57. Consider the following compounds :

$\underline{K}O_2, H_2\underline{O}_2$ and $H_2\underline{S}O_4$

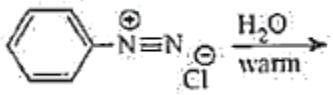
The oxidation states of the underlined elements in term are, respectively,

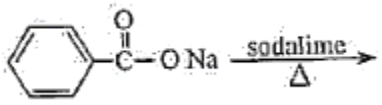
(1) +4, – 4 and + 6 (2) +1, – 1 and +6
(3) + 2, – 2 and +6 (4) +1, – 2 and +4

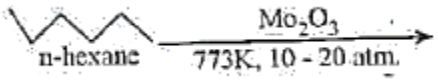
58. Out of the following complex compounds, which of the compound will be having the minimum conductance in solution?

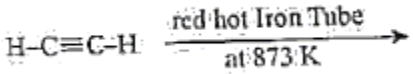
(1) $[Co(NH_3)_5Cl]Cl$ (2) $[Co(NH_3)_3Cl_3]$
(3) $[Co(NH_3)_4Cl_2]$ (4) $[Co(NH_3)_6]Cl_3$

59. Which one of the following reactions does not give benzene as the product?

(1) 

(2) 

(3) 

(4) 

60. Which of the following are paramagnetic?

A. $[NiCl_4]^{2-}$ **B.** $Ni(CO)_4$

C. $[Ni(CN)_4]^{2-}$ **D.** $[Ni(H_2O)_6]^{2+}$

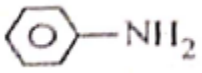
E. $Ni(Ph_3)_4$

Choose the correct answer from the options given below

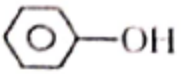
(1) A, D and E only (2) A and C only

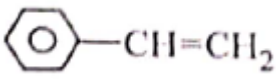
(3) B and E only (4) A and D only

61. Which one of the following compounds does not decolourize bromine water?

(1) 

(2) 

(3) 

(4) 

62. Match List - I with List II

	List-I		List-II
A.	Haber process	**I.**	Fe catalyst
B.	Wacker oxidation	**II.**	$PdCl_2$
C.	Wilkinson catalyst	**III.**	$[(PPh_3)_3RhCl]$
D.	Ziegler catalyst	**IV.**	$TiCl_4$ with $Al(CH_3)_3$

Choose the correct answer from the options given below:

(1) A-I, B-IV, C-III, D-II

(2) A-I, B-II, C-IV, D-III

(3) A-II, B-III, C-I, D-IV

(4) A-I, B-II, C-III, D-IV

63. Match List I with List I

	List-I (Name of Vitamin)		List-II (Deficiency disease)
A.	Vitamin B_{12}	**I.**	Cheilosis
B.	Vitamin D	**II.**	Convulsions
C.	Vitamin B_2	**III.**	Rickets
D.	Vitamin B_6	**IV.**	Pernicious anaemia

Choose the correct answer from the options given below :

(1) A-IV, B-III, C-II, D-I

(2) A-I, B-III, C-II, D-IV

(3) A-IV, B-III, C-I, D-II

(4) A-II, B-III, C-I, D-IV

64. Given below are two statements:

Statement I: Ferromagnetism is considered as an extreme form of paramagnetism.

Statement II: The number of unpaired electrons in a Cr^{2+} ion (Z = 24) is the same as that of a Nd^{3+} ion (Z = 60).

In the light of the above statements, choose the correct answer from the options given below:

(1) Statement I is false but Statement II is true

(2) Both Statement I and Statement II are true

(3) Both Statement I and Statement II are false

(4) Statement I is true but Statement II is false

65. If the half-life ($t_{1/2}$) for a first order reaction is 1 minute, then the time required for 99.9% completion of the reaction is closest to:

(1) 10 minutes (2) 2 minutes

(3) 4 minutes (4) 5 minutes

66. The correct order of decreasing basic strength of the given amines is:

(1) benzenamine > ethanamine > N-methylaniline > N-ethylethanamine

(2) N-methylaniline > benzenamine > ethanamine > N-ethylethanamine

(3) N-ethylethanamine > ethanamine > benzenamine > N-methylaniline

(4) N-ethylethanamine > ethanamine > N-methylaniline > benzenamine

67. Match List I with List II

	List-I (Ion)		List-II (Group Number in Cation Analysis)
A.	Co^{2+}	**I.**	Group-I
B.	Mg^{2+}	**II.**	Group-III
C.	Pb^{2+}	**III.**	Group-IV
D.	Al^{3+}	**IV.**	Group-VI

Choose the correct answer from the options given below:

(1) A-III, B-II, C-I, D-IV

(2) A-III B-IV, C-II, D-I

(3) A-III B-IV, C-I, D-II

(4) A-1B-II, C-IV, D-I

68. Phosphoric acid ionizes in three steps with their ionization constant values K_{a_1}, K_{a_2} and K_{a_3}, respectively while K is the overall ionization constant.

Which of the following statements are true?

A. $\log K = K_{a_1} + K_{a_2} + K_{a_3}$

B. **H_3PO_4 is a stronger acid than $H_2PO_4^-$ and HPO_4^{2-}**

C. $K_{a_1} > K_{a_2} > K_{a_3}$

D. $K_{a_1} = \frac{K_{a_3} + K_{a_2}}{2}$

Choose the correct answer from the options given below:

(1) A, B and C only

(2) A and B only

(3) A and C only

(4) B, C and D only

69. Which of the following statements are true?

A. Unlike Ga that has a very high melting point, Cs has a very low melting point.

B. On Pauling scale, the electronegativity values of N and Cl are not the same.

C. Ar, K^+, Cl^-, Ca^{2+}, and S^{2-} are all isoelectronic species.

D. The correct order of the first ionization enthalpies of Na, Mg, Al, and Si is Si > Al > Mg > Na.

E. The atomic radius of Cs is greater than that of Li and Rb.

Choose the correct answer from the options given below

(1) A, C, and E only (2) A, B, and E only

(3) C and E only (4) C and D only

70. Given below are two statements:

Statement I: Like nitrogen that can form ammonia, arsenic can form arsine.

Statement II: Antimony cannot form antimony pentoxide.

In the light of the above statements, choose the most appropriate answer from the options given below

(1) Statement is incorrect but Statement II is correct

(2) Both Statement I and Statement II are correct

(3) Both Statement I and Statement II are incorrect

(4) Statement-l is correct but Statement II is incorrect

71. Which of the following aqueous solution will exhibit highest boiling point?

(1) 0.015M $C_6H_{12}O_6$

(2) 0.01M Urea

(3) 0.01M KNO_3 (4) 0.01M Na_2SO_4

72. Given below are two statements:

Statement I: Benzenediazonium salt is prepared by the reaction of aniline with nitrous acid at 273 - 278 K. It decomposes easily in the dry state.

Statement II: Insertion of iodine into the benzene ring is difficult and hence iodobenzene is prepared through the reaction of benzenediazonium salt with KI.

In the light of the above statements, choose the most appropriate answer from the options given below:

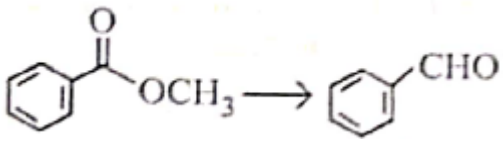
(1) Statement I is incorrect but Statement II is correct

(2) Both Statement I and Statement II are correct

(3) Both Statement I and Statement II are incorrect

(4) Statement I is correct but Statement II is incorrect

73. Identify the suitable reagent for the following conversion.



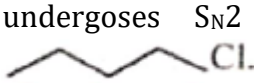
(1) $H_2/Pd\text{-}BaSO_4$

(2) (i) $LiAlH_4$, (ii) H^+/H_2O

(3) (i) $AlH(Ibu)_2$ (ii) H_2O

(4) (i) $NaBH_4$, (ii) H^+/H_2O

74. Given below are two statements: one is labelled as Assertion (A) and the other is labelled as Reason (R).

Assertion (A):  undergoes S_N2 reaction faster than  .

Reason (R): Iodine is a better leaving group because of its large size.

In the light of the above statements, choose the correct answer from the options given below:

(1) A is false but R is true

(2) Both A and R are true and R is the correct explanation of A

(3) Both A and R are true but R is not the correct explanation of A

(4) A is true but R is false

75. The correct order of decreasing acidity of the following aliphatic acids is:

(1) HCOOH > $(CH_3)_3CCOOH$ > $(CH_3)_2CHCOOH$ > CH_3COOH

(2) $(CH_3)_3CCOOH$ > $(CH_3)_2CHCOOH$ > CH_3COOH > HCOOH

(3) CH_3COOH > $(CH_3)_2CHCOOH$ > $(CH_3)_3CCOOH$ > HCOOH

(4) HCOOH > CH_3COOH > $(CH_3)_2CHCOOH$ > $(CH_3)_3CCOOH$

76. Which one of the following reactions doe NOT belong to "Lassaigne's test"?

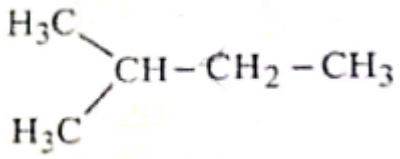
(1) $2CuO - C \xrightarrow{\Delta} 2Cu + CO_2$

(2) $Na + C + N \xrightarrow{\Delta} NaCN$

(3) $2Na + S \xrightarrow{\Delta} Na_2S$

(4) $Na + X \xrightarrow{\Delta} + NaX$

77. How many products (including stereoisomers are expected from monochlorination of the following compound?



(1) 6 (2) 2

(3) 3 (4) 5

78. Sugar 'X'

A. is found in honey

B. is a keto sugar

C. exist in α and β-anomeric forms

D. is laevorotatory

'X' is :

(1) Sucrose (2) D- Glucose

(3) D- Fructose (4) Maltose

79. Dalton's Atomic theory could not explain which of the following?

(1) Law of gaseous volume

(2) Law of conservation of mass

(3) Law of constant proportion

(4) Law of multiple proportion

80. Higher yield of NO in N_2 (g) + O_2 (g) $\rightleftharpoons$ 2NO(g) can be obtained at [ΔH of the reaction = + 180.7 kJ mol^{-1}]

A. higher temperature

B. lower temperature

C. higher concentration of N_2

D. higher concentration of O_2

Choose the correct answer from the options given below:

(1) A, C, D only (2) A, D only

(3) B, C only (4) B, C, D only

81. Match List - I with List - II

	List-I		List-II
A.	XeO_3	**I.**	sp^3d; linear
B.	XeF_2	**II.**	sp^3; pyramidal
C.	$XeOF_2$	**III.**	Sp^3d^3; distorted octahedral
D.	XeF_6	**IV.**	sp^3d^2; square pyramidal

Choose the correct answer from the options given below:

(1) A-IV, B-II, C-I, D-III

(2) A-II, B-I, C-IV, D-III

(3) A-II, B-I, C-III, D-IV

(4) A-IV, B-II, C-III, D-I

82. Match List - I with List II

	List-I (Example)		List-II (Type of Solution)
A.	Humidity	**I.**	Solid in solid
B.	Alloys	**II.**	Liquid in gas
C.	Amalgams	**III.**	Solid in gas
D.	Smoke	**IV.**	Liquid in solid

Choose the correct answer from the options given below:

(1) A-III, B-II, C-I, D-IV

(2) A-II, B-IV, C-I, D-III

(3) A-II, B-I, C-IV, D-III

(4) A-III, B-I, C-IV, D-II

83. Energy and radius tot first Bohr orbit of He^+ and Li^{2+} are

[Given $R_H = 2.18 \times 10^{-18}$ J, $a_0 = 52.9$ pm]

(1) $E_n (Li^{2+}) = -8.72 \times 10^{-16}$J ; $r_n(Li^{2+})$ = 17.6 pm
$E_n(He^+) = -19.62 \times 10^{-16}$J; $r_n(He^+)$ = 17.6 pm

(2) $E_n (Li^{2+}) = -19.62 \times 10^{-18}$J ; $r_n(Li^{2+})$ = 17.6 pm
$E_n(He^+) = -8.72 \times 10^{-18}$J; $r_n(He^+)$ = 26.4 pm

(3) $E_n (Li^{2+}) = -8.72 \times 10^{-18}$J ; $r_n(Li^{2+})$ = 26.4 pm
$E_n(He^+) = -19.62 \times 10^{-18}$J; $r_n(He^+)$ = 17.6 pm

(4) $E_n (Li^{2+}) = -19.62 \times 10^{-16}$J ; $r_n(Li^{2+})$ = 17.6 pm
$E_n(He^+) = -8.72 \times 10^{-16}$J; $r_n(He^+)$ = 26.4 pm

84. Which among the following electronic configurations belong to main group elements?

A. $[Ne]3s^1$ **B.** $[Ar]\ 3d^3\ 4s^2$

C. $[Kr]\ 4d^{10}\ 5s^2\ 5p^5$

D. $[Ar]\ 3d^{10}\ 4s^1$ **E.** $[Rn]\ 5f^0\ 6d^2\ 7s^2$

Choose the correct answer from the option given below :

(1) A, C and D only (2) B and E only

(3) A and C only (4) D and E only

85. $C(s) + 2H_2(g) \rightarrow CH_4(g)$; $\Delta H = -74.8$ kJ mol^{-1} Which of the following diagrams gives an accurate representation of the above reaction? [R → reactants; P → products]

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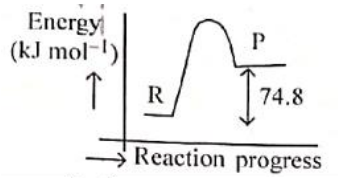

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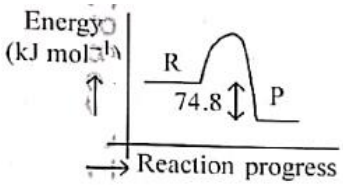

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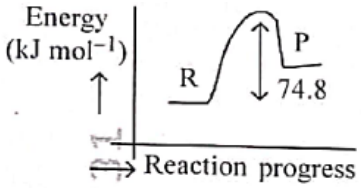

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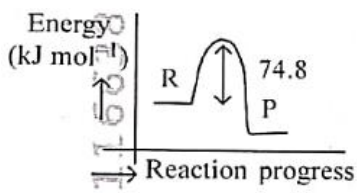
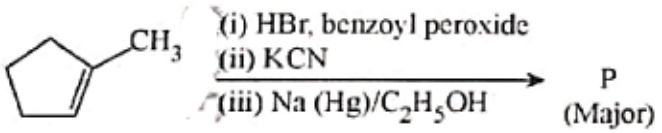
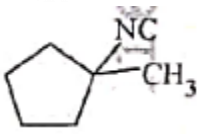
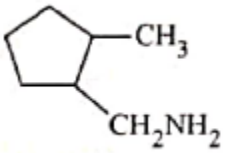
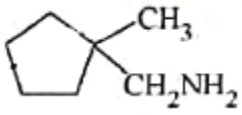


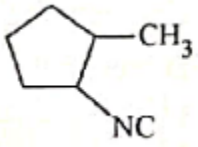
86. Predict the major product 'P' in the following sequence of reactions -



(1) 

(2) 

(3) 

(4) 

87. Identify the correct orders against the property mentioned

A. $H_2O > NH_3 > CHCl_3$ - dipole moment

B. $XeF_4 > XeO_3 > XeF_2$ - number of lone pairs on central atom

C. O – H > C – H > N – O - bond length

D. $N_2 > O_2 > H_2$ - bond enthalpy

Choose the correct answer from the options given below:

(1) B, C only (2) A, D only

(3) B, D only (4) A, C only

88. Total number of possible isomers (both structural as well as stereoisomers) of cyclic ethers of molecular formula C_4H_8O is:

(1) 11 (2) 6

(3) 8 (4) 10

89. For the reaction $A(g) \rightleftharpoons 2B(g)$, the backward reaction rate constant is higher than the forward reaction rate constant by a factor of 2500, at 1000 K. [Given: R = 0.0831 L atm mol K^{-1}] K_P for the reaction at 1000 K is

(1) 0.021 (2) 83.1

(3) 2.077×10^5 (4) 0.033

90. 5 moles of liquid X and 10 moles of liquid Y make a solution having a vapour pressure of 70 torr. The vapour pressures of pure X and Y are 63 torr and 78 torr respectively. Which of the following is true regarding the described solution?

(1) The solution has volume greater than the sum of individual volumes

(2) The solution shows positive deviation.

(3) The solution shows negative deviation.

(4) The solution is ideal.