

80 previous-year questions, every one with the official answer and a worked solution.

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NSEC 2010

Time: 120 minutes · Maximum marks: 240 · Questions: 80

1. The orange colour of carrot is due to the presence of β -carotene in it. β -carotene is coloured due to the presence of

- (A) Aromatic ring
(B) Extended conjugation
(C) Cyclic conjugation
(D) Carbonyl group

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

2. Keto and enol forms of a compound are related to each other as

- (A) Resonance structure
(B) Conformations
(C) Configurational isomers
(D) Constitutional isomers

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

3. A solution of 0.10 M NaZ has $\text{pH} = 8.90$. The K_a of HZ is

- (A) 1.6×10^{-4}
(B) 1.6×10^{-5}
(C) 6.3×10^{-10}
(D) 6.3×10^{-11}

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

4. The structure of SF_4 is

(A) Trigonal bipyramidal

(B) Square planar

(C) Tetrahedral

(D) Octahedral

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

5. The conversion which represents oxidation is

(A) $\text{NO}_2^- \rightarrow \text{N}_2$

(B) $\text{VO}_2^+ \rightarrow \text{VO}_3^-$

(C) $\text{ClO}^- \rightarrow \text{Cl}^-$

(D) $\text{CrO}_4^{2-} \rightarrow \text{Cr}_2\text{O}_7^{2-}$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

6. The number of all types of isomers of chlorobutane is

(A) 2

(B) 4

(C) 6

(D) 5

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

7. The secondary structure of a protein molecule can be promoted by the presence of

(A) Proline residues

(B) Glycine residues

(C) Leucine residues

(D) Aspartic acid residues

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

8. A container having volume V contains an ideal gas at 1 atm pressure. It is connected to another evacuated container having volume 0.5 dm^3 through a tube having negligible volume. After some time the first container is found to have pressure 570 mm of Hg. If temperature is constant V is

- (A) 1.0 dm^3 (B) 1.5 dm^3
(C) 2.0 dm^3 (D) 2.5 dm^3

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

9. The set that contains all nucleophiles is

- (A) H_2O , BF_3 , Cl^- , NH_3 (B) CH_3NH_2 , H_2O , I^- , $\text{CH}_3\text{-SH}$
(C) AlCl_3 , H^+ , BF_3 , I_2 (D) AlCl_4^- , OH^- , Br^- , H_2

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

10. The pair which contains both molecules polar is

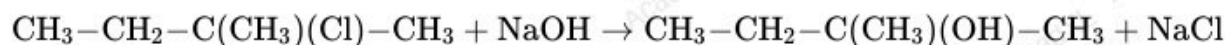
- (A) O_2 & H_2O (B) CO_2 & PCl_3
(C) SO_2 & SCl_2 (D) CS_2 & NO_2

[3 marks, -1 for a wrong answer]

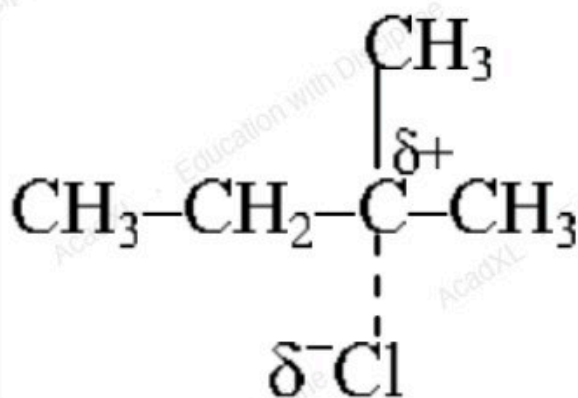
ANSWER: C

No solution stored for this question.

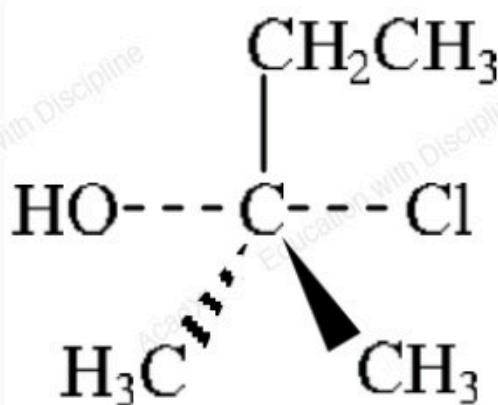
11. The intermediate formed in the following reaction is



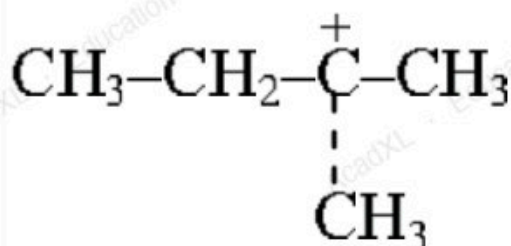
(A)



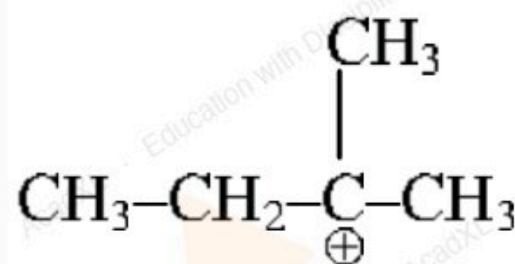
(B)



(C)



(D)

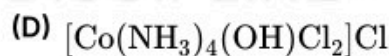
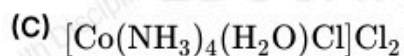
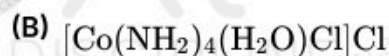
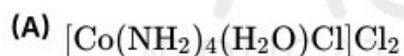


[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

12. The formula of tetraammineaquochlorocobalt (III) chloride is

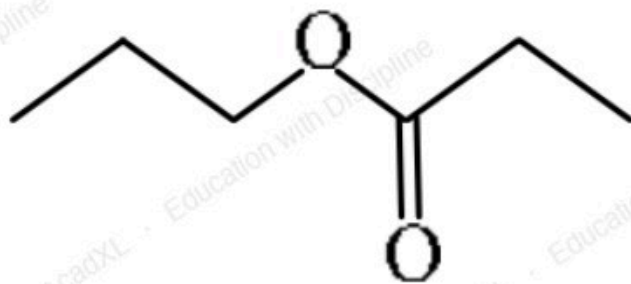


[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

13. The IUPAC name of the following compound is



(A) n-propyl ethanoate

(B) ethyl propanoate

(C) pentanoic anhydride

(D) n-propyl propanoate

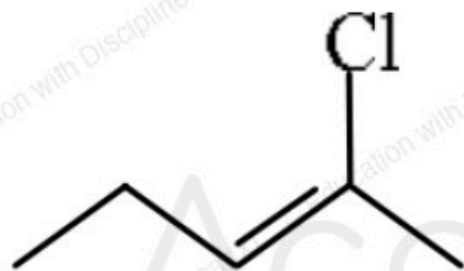
[3 marks, -1 for a wrong answer]

ANSWER: D

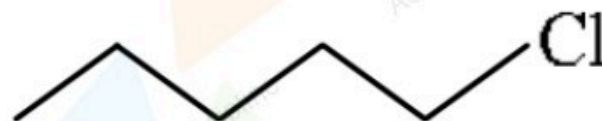
No solution stored for this question.

14. The compound which would undergo S_N2 reaction fastest is

(A)



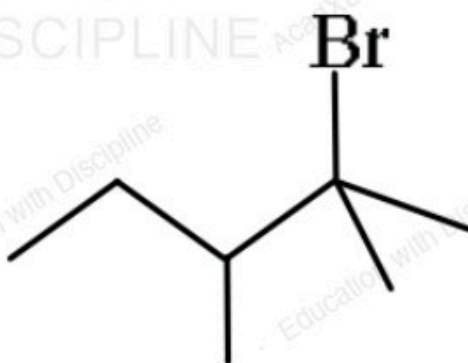
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

15. A reaction will never be spontaneous at any temperature and pressure if

(A) $\Delta S = +ve, \Delta H = +ve$

(B) $\Delta S = +ve, \Delta H = -ve$

(C) $\Delta S = -ve, \Delta H = +ve$

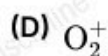
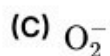
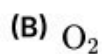
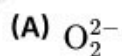
(D) $\Delta S = -ve, \Delta H = -ve$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

16. The species that contains maximum number of electrons in the antibonding molecular orbitals is



[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

17. Body-centred cubic lattice has a co-ordination number of

(A) 8

(B) 10

(C) 6

(D) 4

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

18. Cyclohexene reacts with limited amount of bromine in the presence of light to form product X (C_6H_9Br). The statement correct about X is

(A) It is racemate

(B) It is a product of an addition reaction

(C) It is formed through a cationic intermediate

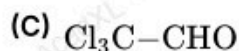
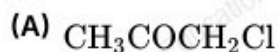
(D) It is optically active

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

19. The compound that would undergo hydration very easily is



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

20. In a DNA molecule -

(A) $A = C$

(B) $A + G = C + T$

(C) $T = G$

(D) $A/T = 2$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

21. Some heavy water is added to pure water. The numbers of different molecules and ions present in the mixture at equilibrium are

(A) 2, 0

(B) 6, 3

(C) 3, 6

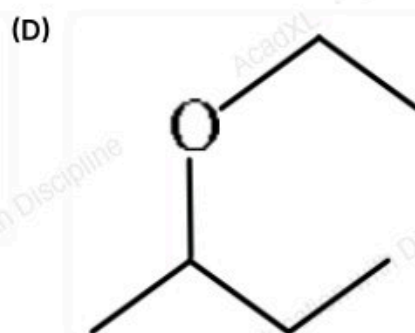
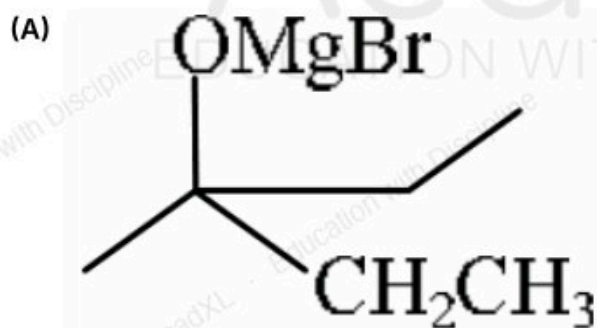
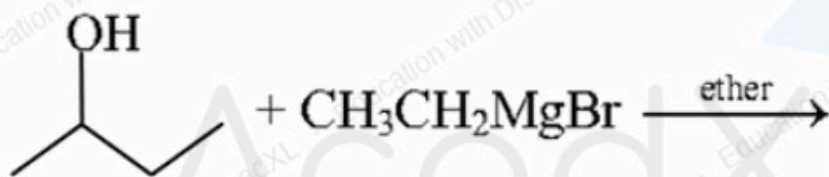
(D) 3, 4

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

22. The product/s of the following reaction is/are (an alcohol) + $\text{CH}_3\text{CH}_2\text{MgBr} \xrightarrow{\text{ether}}$



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

23. A compound containing beryllium has the following composition. Be = 6.1%, N = 37.8%, Cl = 48%, H = 8.1%. One mole of the compound has mass of 148 g and average atomic mass of beryllium is 9. The molecular formula of the compound is

- (A) $\text{BeN}_4\text{H}_{12}\text{Cl}_2$ (B) $\text{BeN}_2\text{H}_{10}\text{Cl}$
(C) $\text{BeN}_4\text{H}_2\text{Cl}_3$ (D) $\text{Be}_2\text{N}_4\text{H}_{10}\text{Cl}_2$

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

24. The product formed when chlorine gas is passed over hot iron is -

- (A) Iron (II) chloride is formed (B) Iron (III) chloride is formed
(C) A mixture of iron (II) chloride and iron (III) chloride is formed (D) No reactions will take place

[3 marks, -1 for a wrong answer]

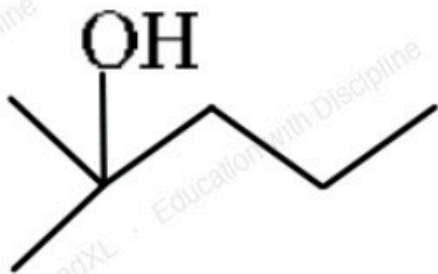
ANSWER: B

No solution stored for this question.

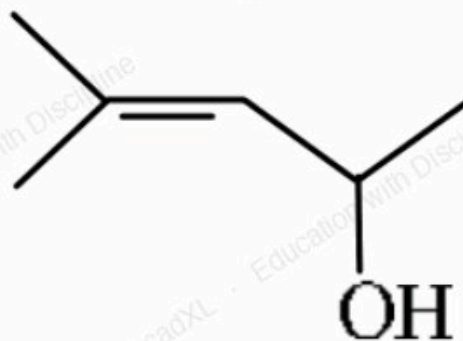
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25. The major product of the following reaction is $(\text{CH}_3)_2\text{C}=\text{CH}-\text{CH}_2-\text{CH}_3 \xrightarrow{\text{(i) B}_2\text{H}_6, \text{ ether (ii) H}_2\text{O}_2, \text{ NaOH}}$

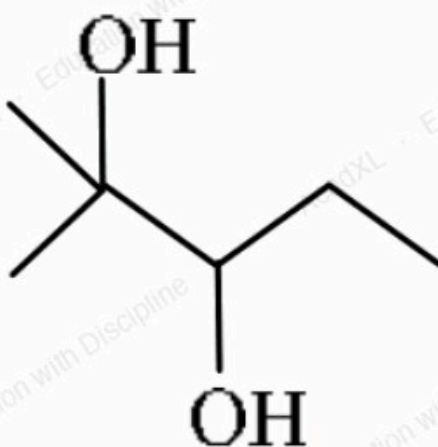
(A)



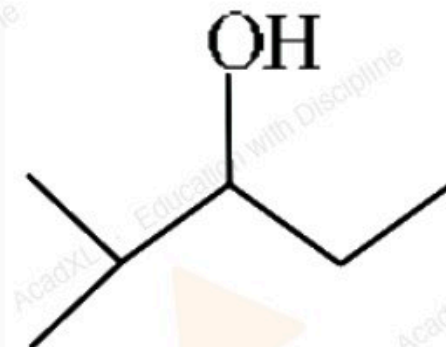
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

26. 20 g of compound X are dissolved in 500 mL of water and the osmotic pressure of the resulting solution is 500 mm of Hg at 10 °C. The average molecular mass of X is

(A) 1115.42

(B) 1150.70

(C) 1412.84

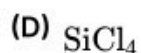
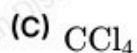
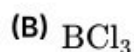
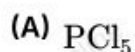
(D) 1163.88

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

27. The compound that has the highest ionic character associated with the X—Cl bond is



[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

28. When an apple is cut, the exposed part begins to turn brown. Often the browning action can be arrested by adding a few drops of lemon juice to the exposed area. The basis for this treatment is

(A) lemon juice is an antioxidant

(B) denaturation of proteins of the enzymes

(C) decolourization due to lemon juice

(D) activation of decolourizing enzymes under acidic medium

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

29. (i) $\text{CH}_2=\text{CH}-\text{CH}_2-\text{CH}=\text{CH}_2$ (ii) $\text{CH}_2=\text{CH}-\text{CH}=\text{CH}-\text{CH}_3$ (iii)

$\text{CH}_3-\text{CH}=\text{CH}-\text{CH}=\text{CH}-\text{CH}_3$. The numbers of possible geometric isomers for the above compounds respectively are

(A) 0, 2, 4

(B) 2, 2, 4

(C) 0, 3, 3

(D) 0, 2, 3

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

30. The velocity of an electron in the second Bohr orbit of an atom of an element is $1.1 \times 10^6 \text{ m sec}^{-1}$. Its velocity in the third orbit is

(A) $3.3 \times 10^6 \text{ m sec}^{-1}$

(B) $2.2 \times 10^6 \text{ m sec}^{-1}$

(C) $7.333 \times 10^5 \text{ m sec}^{-1}$

(D) $3.666 \times 10^5 \text{ m sec}^{-1}$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

31. The compound which does not react with bromine easily at room temperature is

- (A) phenol (B) 2-butyne
(C) chlorobenzene (D) 1-pentene

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

32. The oxidation number and co-ordination number of chromium in complex ion $[\text{Cr}(\text{C}_2\text{O}_4)_2(\text{H}_2\text{O})_2]^-$ are

- (A) 3, 6 (B) 2, 6
(C) 2, 8 (D) 3, 8

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

33. The change in hybridization of aluminum when Al_2Cl_6 decomposes in the gas phase is

- (A) $\text{sp}^2 \rightarrow \text{sp}^3$ (B) $\text{sp} \rightarrow \text{sp}^2$
(C) $\text{sp} \rightarrow \text{sp}^3$ (D) $\text{sp}^3 \rightarrow \text{sp}^2$

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

34. The molarity of 20% w/w sulphuric acid of density 1.14 g cm^{-3} is

- (A) 2.32 (B) 2.02
(C) 2.12 (D) 2.22

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

35. The pH of a solution made by mixing 200 mL of 0.0657 M NaOH, 140 mL of 0.107 M HCl and 160 mL of water is

- (A) 3.04 (B) 2.43
(C) 2.74 (D) 2.27

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

36. An inorganic bromide impurity in a sample is precipitated as silver bromide. 2.00 g of the sample required 6.4 mL of 0.20 M AgNO_3 to completely precipitate the impurity. The mass percentage of the impurity is

- (A) 5.11 (B) 2.56
(C) 9.15 (D) 1.28

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

37. The major product of the following reaction is $\text{CH}_3\text{--CH}_2\text{--C}\equiv\text{CH} \xrightarrow{\text{(i) NaNH}_2 \text{ (ii) CH}_3\text{CH}_2\text{Br}}$

- (A) $\text{H}_3\text{C--CH}_2\text{--C}\equiv\text{C--CH}_2\text{--CH}_3$ (B) $\text{H}_3\text{C--CH(CH}_2\text{CH}_3\text{)--C}\equiv\text{CH}$
(C) $\text{H}_3\text{C--CH}_2\text{--CH(NH}_2\text{)--CH}_3$ (D) $\text{H}_3\text{C--CH}_2\text{--C}\equiv\text{C--NH}_2$

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

38. The compound which can act as an oxidizing agent as well as a reducing agent is

- (A) HNO_2 (B) HI
(C) HCN (D) HCOOH

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

39. The sum of all the quantum numbers of hydrogen atom is

- (A) -1 (B) 0
(C) $+1/2$ (D) $3/2$

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

40. The bond having the highest bond energy is

- (A) $C=C$ (B) $C=S$
(C) $C=O$ (D) $P=N$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

41. Adding powdered Pb and Fe to a solution containing 1 M each of Pb^{2+} and Fe^{2+} ions would result in the formation of ($E_{Pb^{2+}/Pb}^{\circ} = -0.126 V$ and $E_{Fe^{2+}/Fe}^{\circ} = -0.44 V$)

- (A) more of Pb and Fe^{2+} ions (B) more of Fe and Pb^{2+} ions
(C) more of Pb and Fe (D) more of Pb^{2+} and Fe^{2+} ions

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

42. The formal charge on the sulphur atom in the structure given below is $CH_3-CH_2-CH_2-SO-CH_3$

- (A) 0 (B) $+1$
(C) -1 (D) $+2$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

43. The number of transition state/s and intermediate/s in a unimolecular nucleophilic substitution reaction are respectively-

(A) 3, 1

(B) 2, 2

(C) 2, 1

(D) 1, 1

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

44. Cyclohexanone oxime is converted into ϵ -caprolactam by the treatment with

(A) dil HCl

(B) NaOC_2H_5

(C) ammonia

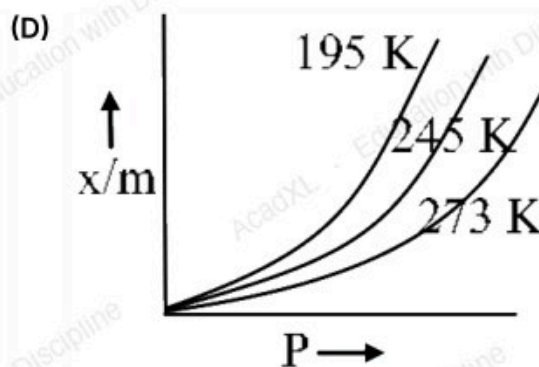
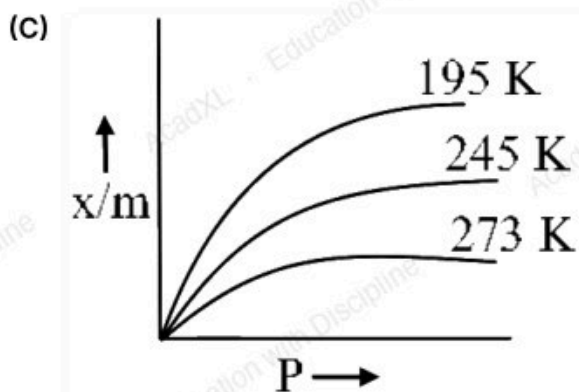
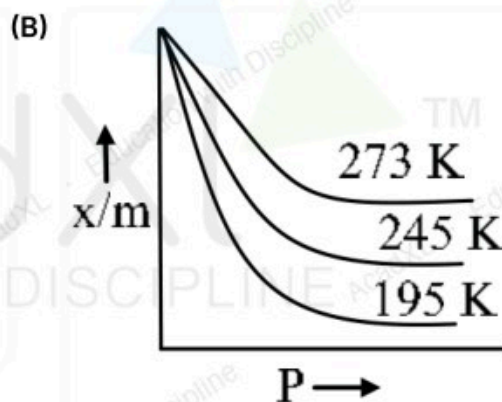
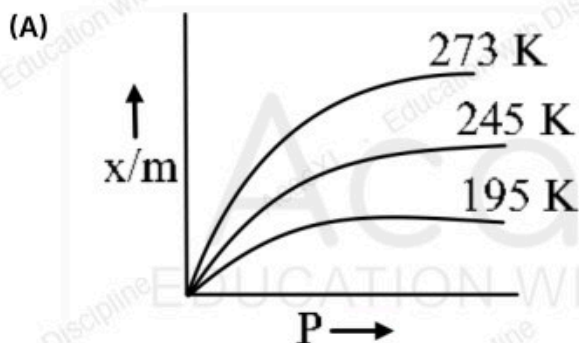
(D) conc H_2SO_4

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

45. Freundlich adsorption isotherms are properly represented as in



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

46. The cell $\text{Al}_{(s)}|\text{Al}^{3+}_{(aq)} (0.001 \text{ M})||\text{Cu}^{2+}_{(aq)} (0.10 \text{ M})|\text{Cu}_{(s)}$ has a standard cell potential $E^\circ = 2.00 \text{ V}$ at 25°C . The cell potential at the given concentrations will be

- (A) 2.07 V (B) 2.03 V
(C) 1.97 V (D) 1.94 V

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

47. Ethylene undergoes polymerization to polyethylene. The monomer/s of the following polymer is/are $(-\text{CH}_2-\text{CH}(\text{OCOCH}_3)-\text{CH}_2-\text{CH}(\text{OCOCH}_3)-)_n$

- (A) $\text{CH}_2=\text{CH}-\text{OH} + \text{CH}_3\text{COCl}$ (B) $\text{CH}_2=\text{CH}-\text{COOCH}_3$
(C) $\text{CH}_2=\text{CH}-\text{OCOCH}_3$ (D) $\text{CH}\equiv\text{C}-\text{OCOCH}_3$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

48. Though proteins have a range of molecular weights and different compositions, the percentage of carbon in any protein is

- (A) 50-55% (B) 40-45%
(C) 60-65% (D) 70-75%

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

49. The mass of copper deposited when a current of 10 A is passed through a solution of copper (II) nitrate for 30.6 s is

- (A) 0.101 g (B) 0.201 g
(C) 0.403 g (D) 6.04 g

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

50. The correct order of acidity of the following compounds is (I) CH_3COOH (II) ClCH_2COOH (III) $\text{O}_2\text{NCH}_2\text{COOH}$ (IV) HOCH_2COOH

(A) $\text{IV} > \text{II} > \text{III} > \text{I}$

(B) $\text{I} > \text{IV} > \text{II} > \text{III}$

(C) $\text{II} > \text{III} > \text{I} > \text{IV}$

(D) $\text{III} > \text{II} > \text{IV} > \text{I}$

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

51. Maximum number of moles of barium phosphate formed when 0.9 mole of barium chloride is mixed with 0.4 mole of sodium phosphate is

(A) 0.2

(B) 0.4

(C) 0.9

(D) 1.3

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

52. The internal energy change involved when a system goes from state A to state B is 40 kJ. If the system goes from A to B by a reversible path and return to A by an irreversible path, the net change in internal energy is

(A) 40 kJ

(B) $> 40 \text{ kJ}$

(C) $< 40 \text{ kJ}$

(D) zero

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

53. The molarity of NH_3 solution of pH 12.0 at 25°C is (K_b of NH_3 at 25°C is 1.8×10^{-5})

(A) 0.55 M

(B) 5.5 M

(C) 0.01 M

(D) 11.7 M

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

54. The highest magnetic moment is shown by a transition metal ion with the outer electronic configuration

(A) $3d^2$

(B) $3d^5$

(C) $3d^7$

(D) $3d^9$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

55. A ring system is aromatic if it is planar, has cyclic closed conjugation and has $(4n + 2) \pi$ electrons delocalized over the ring. Here n is

(A) number of rings

(B) an integer including zero

(C) an integer excepts zero

(D) number of π -bonds

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

56. For the following reaction, the value of K changes with $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{NO}(\text{g})$

$$\Delta H = +180 \text{ kJ mol}^{-1}$$

(A) change in pressure

(B) change in concentration of oxygen

(C) introduction of $\text{NO}(\text{g})$

(D) change in temperature

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

57. The part of a DNA molecule responsible for the absorption of UV light is

(A) Deoxyribose

(B) Nitrogen base

(C) Phosphodiester bond

(D) Phosphate group

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

58. A weak acid HA has $K_a = 1.00 \times 10^{-5}$ at 25°C . If 0.100 mole of this acid is dissolved in 1 L water, the percentage of the acid dissociated at equilibrium will be closest to

- (A) 0.100% (B) 99.0%
(C) 1.00% (D) 99.9%

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

59. Thorium-232 loses a total of 6α particles and 4β particles in a decay process. The isotope produced at the end is

- (A) ${}^{208}_{78}\text{Pt}$ (B) ${}^{208}_{82}\text{Pb}$
(C) ${}^{202}_{78}\text{Pb}$ (D) ${}^{208}_{83}\text{Bi}$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

60. Ethyl phenyl ether is treated with conc HI at 0°C and the mixture of products is treated with thionyl chloride. The products formed are

- (A) Ethanol + Chlorobenzene (B) Phenol + Iodoethane
(C) Iodoethane + Chlorobenzene (D) Chloroethane + Phenol

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

61. The correct order of the size of the species is

- (A) $\text{Ca}^{2+} < \text{Ar} < \text{K}^+ < \text{Cl}^-$ (B) $\text{Ca}^{2+} < \text{K}^+ < \text{Ar} < \text{S}^{2-}$
(C) $\text{K}^+ < \text{Ar} < \text{Cl}^- < \text{S}^{2-}$ (D) $\text{Ar} < \text{Ca}^{2+} < \text{K}^+ < \text{Cl}^-$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

62. Pure germanium is an example of

- (A) an intrinsic semiconductor
(C) a p-type semiconductor

- (B) a n-type semiconductor
(D) a n-p type semiconductor

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

63. A nonapeptide in rat on hydrolysis gave the following identifiable tripeptides : Gly-Ala-Phe, Ala-Leu-Val, Gly-Ala-Leu, Phe-Glu-His, and His-Gly-Ala, The sequence in the nonapeptide is

- (A) Gly-Ala-Leu-Val-Phe-Glu-His-His-Gly
(C) Gly-Ala-Phe-Glu-His-Gly-Ala-Leu-Val

- (B) Ala-Phe-Leu-Val-Gly-Leu-Phe-Glu-His
(D) Phe-Ala-Leu-Val-Gly-Glu-His-Gly-Ala

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

64. The enthalpy of formation of carbon dioxide and water are -395 kJ and -285 kJ , respectively, and the enthalpy of combustion of acetic acid is -869 kJ . Hence the enthalpy of formation of acetic acid is

- (A) 235 kJ
(C) 420 kJ

- (B) -235 kJ
(D) 491 kJ

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

65. The complex that exhibits co-ordination isomerism is

- (A) $[\text{Cr}(\text{NCS})(\text{H}_2\text{O})_5]^{2+}$
(C) $[\text{Cr}(\text{NH}_3)_6][\text{Co}(\text{CN})_6]$

- (B) $[\text{Cr}(\text{NH}_3)_6]\text{Cl}_3$
(D) $[\text{CoCl}_2(\text{NH}_3)_4]\text{Cl} \cdot \text{H}_2\text{O}$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

66. The solubility of a salt MX is $3.60 \times 10^{-5} \text{ mol dm}^{-3}$. The K_{sp} of MX is

(A) 3.60×10^{-5}

(B) 12.96×10^{-10}

(C) 7.20×10^{-5}

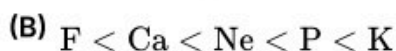
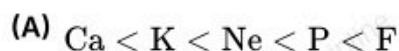
(D) 1.80×10^{-10}

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

67. The correct order of increasing first ionization energy is

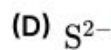
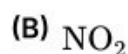


[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

68. The strong field ligand is

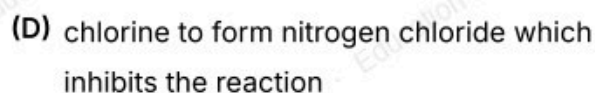


[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

69. When an inert atmosphere is required in metallurgical operation nitrogen is commonly used. However in the extraction of titanium from TiCl_4 using magnesium, helium is used as nitrogen reacts with



[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

70. If the size of gene is 1000 kD, the approximate molecular weight of the corresponding mRNA is

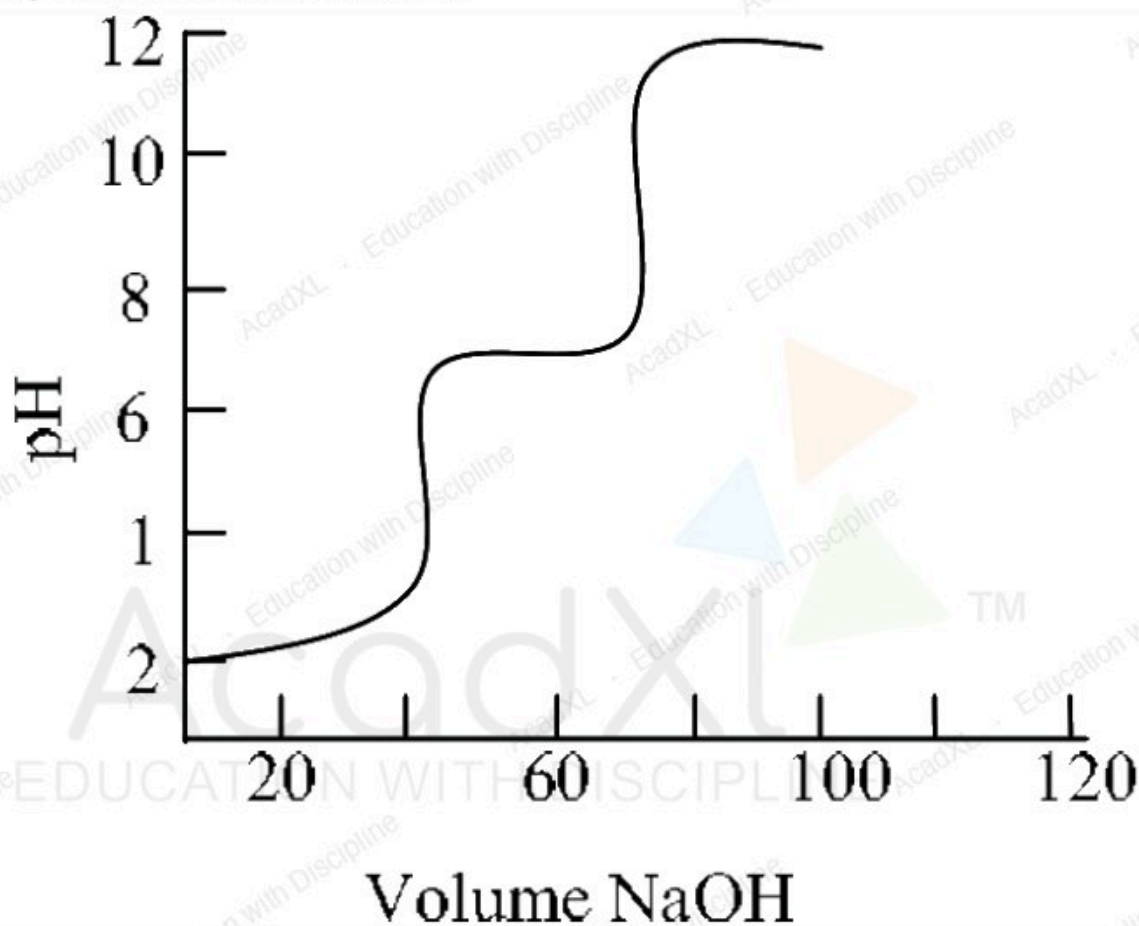
- (A) 250 kD (B) 500 kD
(C) 1000 kD (D) 2000 kD

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

71. The following curve represents the titration of



- (A) a diprotic acid (B) two monoprotic acids with the same K_a , but different concentrations
(C) two monoprotic acids with different K_a , but the same concentration (D) two monoprotic acids with different K_a , and different concentrations

[3 marks, -1 for a wrong answer]

ANSWER: C, D

No solution stored for this question.

72. The formation of ammonia from nitrogen and hydrogen gases can be written by the following two equations (a) $\frac{1}{2}\text{N}_2(\text{g}) + \frac{3}{2}\text{H}_2(\text{g}) \rightleftharpoons \text{NH}_3(\text{g})$ (b) $\frac{1}{3}\text{N}_2(\text{g}) + \text{H}_2(\text{g}) \rightleftharpoons \frac{2}{3}\text{NH}_3(\text{g})$. The two equations have equilibrium constants K_1 and K_2 , respectively. The relationship between the equilibrium constants is

(A) $K_1 = K_2^2$

(B) $K_1^3 = K_2^2$

(C) $K_1^{2/3} = K_2$

(D) $K_1 = K_2^{3/2}$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

73. The largest number of molecules are present in

(A) 70 g of sulphur dioxide

(B) 64 g of Nitrogen pentoxide

(C) 36 g of water

(D) 34 g of carbon dioxide

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

74. For a first order reaction, the half-life $t_{1/2}$ is related to the constant (k) by the relation

(A) $t_{1/2} = \frac{2.303}{k} \log 2$

(B) $t_{1/2} = \frac{1}{k}$

(C) $t_{1/2} = \frac{k}{2.303} \log 2$

(D) $t_{1/2} = \frac{2.303}{k}$

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

75. A mixture of two liquids which boils without change in composition is called

(A) Stable mixture

(B) Binary liquid mixture

(C) Azeotropic mixture

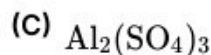
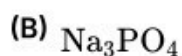
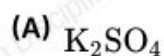
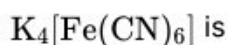
(D) Zerotropic mixture

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

76. The aqueous solution having osmotic pressure nearest to that of an equimolar solution of



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

77. For the reaction $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$ Which of the following is correct ?

(A) $\Delta H = \Delta E$

(B) $\Delta H > \Delta E$

(C) $\Delta H < \Delta E$

(D) $\Delta H = 2\Delta E$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

78. A gold sol is prepared by

(A) dissolving gold in Aqua-regia and precipitation by dilution

(B) double decomposition of $AuCl_3$

(C) Bredy's arc method

(D) grinding in a colloidal mill

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

79. The rate constants k_1 and k_2 of two reactions are in the ratio 2 : 1. The corresponding energies of activation of the two reactions will be related by

(A) $E_1 > E_2$

(B) $E_1 < E_2$

(C) $E_1 = E_2$

(D) $E_1 = 2E_2$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

80. The correct statement about order of reaction is

- (A) it can be predicted from the stoichiometric coefficients of the reactants
- (B) it has always positive integral values
- (C) it has always positive integral or fractional values
- (D) it has to be determined experimentally

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

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Answer key

1. B	2. D	3. C	4. A	5. B	6. D
7. C	8. B	9. B	10. C	11. C	12. C
13. D	14. C	15. C	16. A	17. A	18. A
19. C	20. B	21. C	22. C	23. A	24. B
25. D	26. C	27. D	28. B	29. D	30. C
31. C	32. A	33. D	34. A	35. B	36. A
37. A	38. A	39. D	40. C	41. A	42. B
43. C	44. D	45. C	46. B	47. C	48. A
49. A	50. D	51. A	52. D	53. A	54. B
55. B	56. D	57. B	58. C	59. B	60. D
61. B	62. A	63. C	64. D	65. C	66. B
67. C	68. B	69. B	70. D	71. C, D	72. C
73. C	74. A	75. C	76. C	77. C	78. C
79. B	80. D				

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