

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

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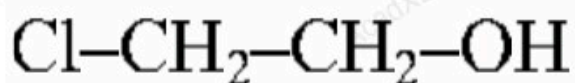
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NSEC 2009

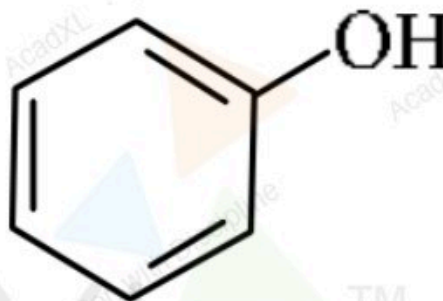
Time: 120 minutes · Maximum marks: 240 · Questions: 80

1. The most acidic among the following compounds is

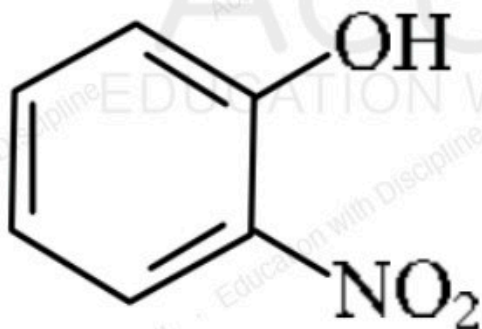
(A)



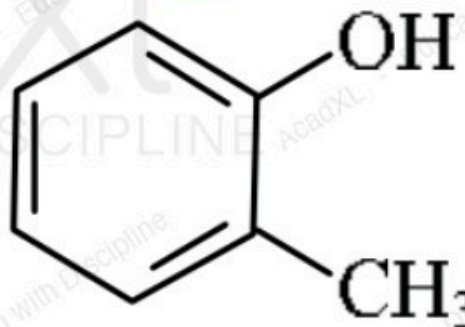
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

2. The number of ether metamers represented by the molecular formula $C_4H_{10}O$ is

(A) 1

(B) 2

(C) 3

(D) 4

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

3. An isocyanide on reduction with hydrogen in the presence of platinum gives

(A) amide

(B) primary amine

(C) secondary amine

(D) alcohol

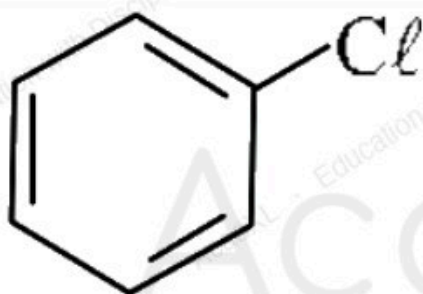
[3 marks, -1 for a wrong answer]

ANSWER: C

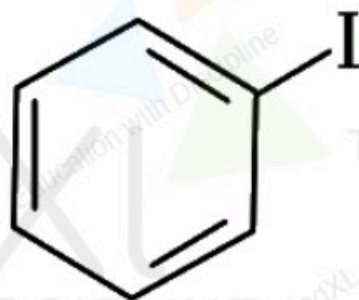
No solution stored for this question.

4. The compound X in the reaction, $C_6H_6 + ICl \xrightarrow{\text{anhydrous } AlCl_3} X$ is

(A)



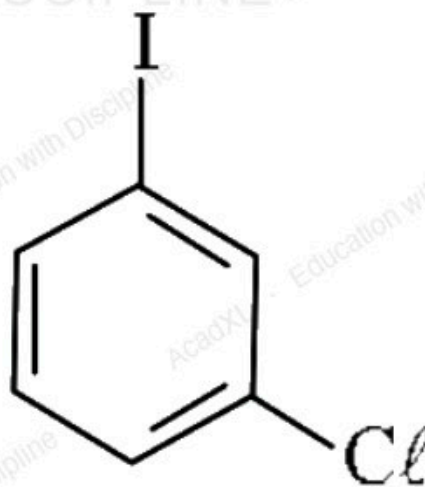
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

5. S_N reactivity of the following halides. (i) $(CH_3)_3CBr$ (ii) $(C_6H_5)_2CHBr$ (iii) $(C_6H_5)_2C(CH_3)Br$ (iv)

$(CH_3)_2CHBr$ will be in the order

(A) $iv > i > ii > iii$

(B) $ii > i > iii > iv$

(C) $i > iii > ii > iv$

(D) $iii > ii > i > iv$

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

6. An alcohol, an aldehyde and a carboxylic acid of comparable mass will have their boiling points in the order

(A) alcohol < carboxylic acid < aldehyde

(B) aldehyde < alcohol < carboxylic acid

(C) alcohol < aldehyde < carboxylic acid

(D) carboxylic acid < aldehyde < alcohol

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

7. The substances used for the preparation of ether by williamson's synthesis are

(A) $(CH_3)_3CBr$ and CH_3ONa

(B) $(CH_3)_3CBr$ and CH_3OH

(C) CH_3Br and $(CH_3)_3CONa$

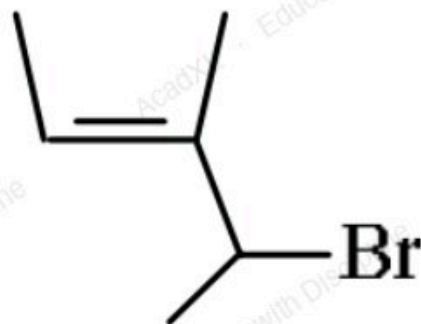
(D) CH_3Br and $(CH_3)_3COH$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

8. The IUPAC name of the following compound is



(A) 2-bromo-3-methylbut-3-ene

(B) 4-bromo-3-methylbut-2-ene

(C) 2-bromo-3-methylbut-3-ene

(D) 4-bromo-2,3-dimethylbut-2-ene

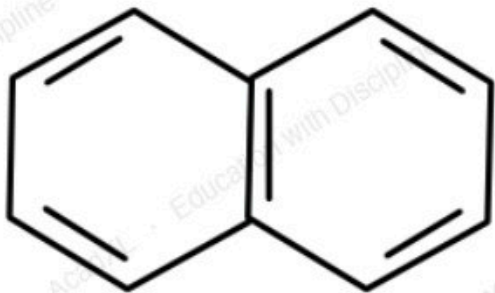
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ANSWER: B

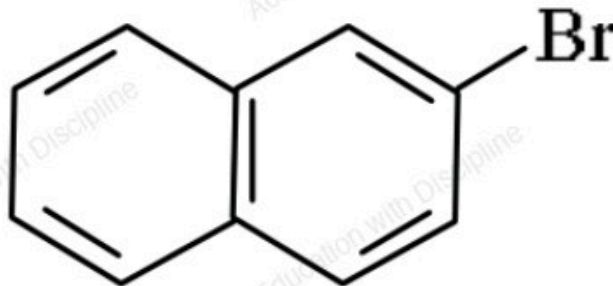
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9. The product A in the reaction (aryl bromide) $+ 2\text{Na} \xrightarrow{\text{dry ether}} \text{A} + 2\text{NaBr}$ is

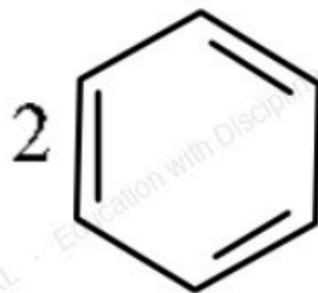
(A)



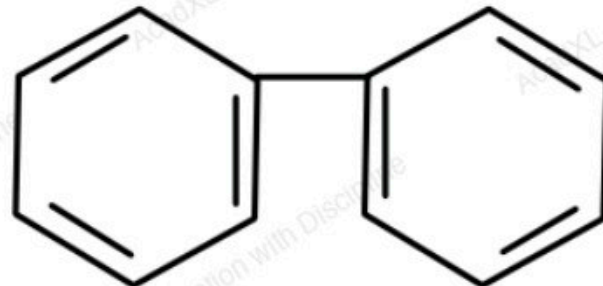
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

10. The isomeric alcohol which has a chiral carbon atom is

(A) n-butyl alcohol

(B) iso-butyl alcohol

(C) sec-butyl alcohol

(D) tert-butyl alcohol

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

11. Geometrical isomerism results because the molecule

(A) rotates the plane of polarized light

(B) has a plane of symmetry

(C) has a centre of symmetry

(D) has two dissimilar groups attached to both ends of double bond

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

12. During alcoholic fermentation of sugars, the enzyme which converts glucose (or fructose) into ethanol is

- (A) zymase (B) invertase
(C) maltase (D) urease

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

13. Compound X on treatment with HI gives Y. Y on treatment with ethanolic KOH gives Z (an isomer of X). Ozonolysis of Z (with H_2O_2 workup) gives a two-carbon carboxylic acid and four carbon ketone.

Hence, X is

- (A) 2-methyl-2-pentene (B) 4-methyl-1-pentene
(C) 2,3-dimethyl-2-butene (D) 3-methyl-1-pentene

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

14. The reagent which will be suitable to distinguish 1-methoxy-3-methyl-2-butene from isomeric 4-methyl-3-penten-1-ol is

- (A) bromine in chloroform (B) alkaline potassium permanganate
(C) ammoniacal silver nitrate (D) sodium metal suspended in hexane

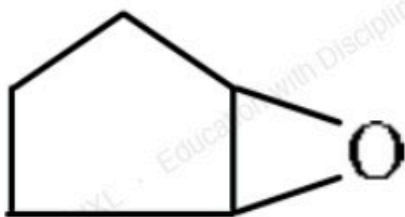
[3 marks, -1 for a wrong answer]

ANSWER: D

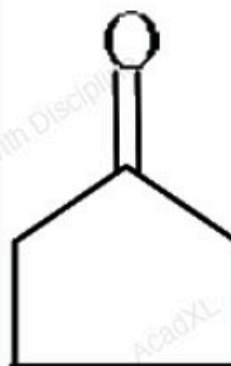
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15. The major product of the following reaction is: cyclopentanol $\xrightarrow[\text{(ii) C}_6\text{H}_5\text{COOH}]{\text{(i) H}_3\text{PO}_4, 150^\circ\text{C}}$

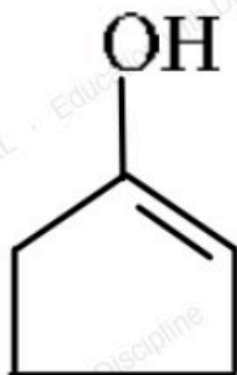
(A)



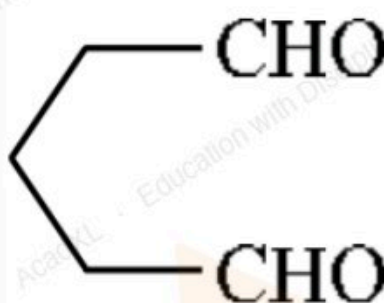
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

16. Among the following isomeric chloro compounds, the compound which will undergo $\text{S}_\text{N}2$ reaction readily is

(A) 4-chloro-1-butene

(B) 1-chloro-1-butene

(C) 1-chloro-2-butene

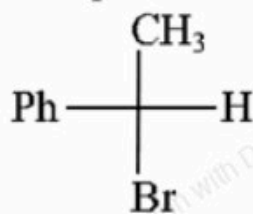
(D) 2-chloro-1-butene

[3 marks, -1 for a wrong answer]

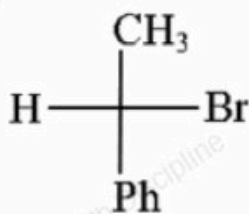
ANSWER: A

No solution stored for this question.

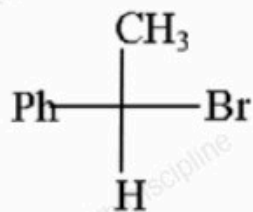
17. The pair of enantiomers among the following compounds is



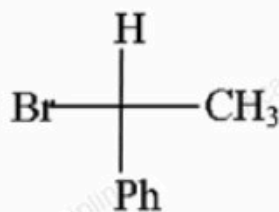
I



II



III



IV

(A) I and IV

(B) II and IV

(C) II and III

(D) I and II

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

18. Compound X ($\text{C}_5\text{H}_{10}\text{O}$) is a chiral alcohol. It is catalytically hydrogenated to an achiral alcohol Y ($\text{C}_2\text{H}_{12}\text{O}$) and oxidized by activated MnO_2 to an achiral carbonyl compound Z ($\text{C}_5\text{H}_{10}\text{O}$). Compound X is

(A) 1-pentene-3-ol

(B) 4-penten-2-ol

(C) 3-methyl-2-buten-1-ol

(D) 2-methyl-2-buten-1-ol

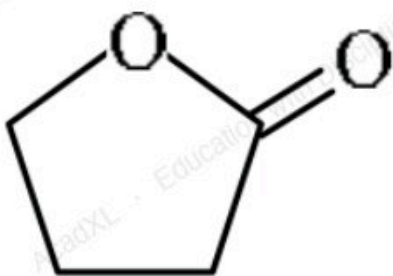
[3 marks, -1 for a wrong answer]

ANSWER: A

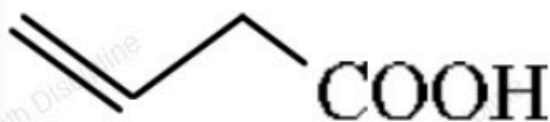
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19. 4-Oxobutanoic acid is reduced with Na-borohydride and the product is treated with aqueous acid. The final product is

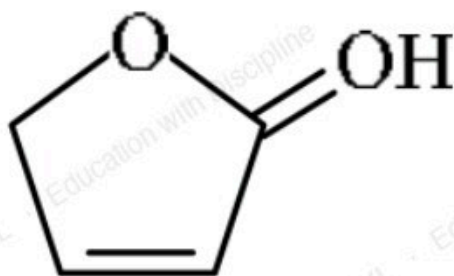
(A)



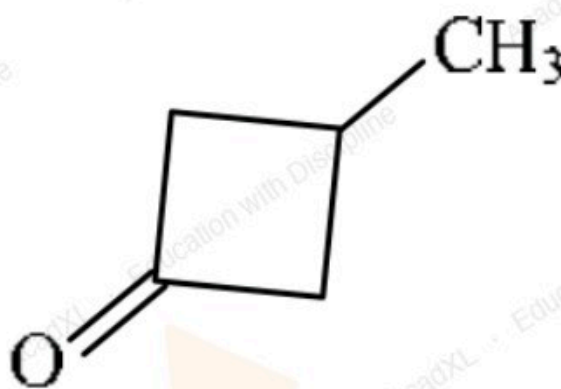
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: A

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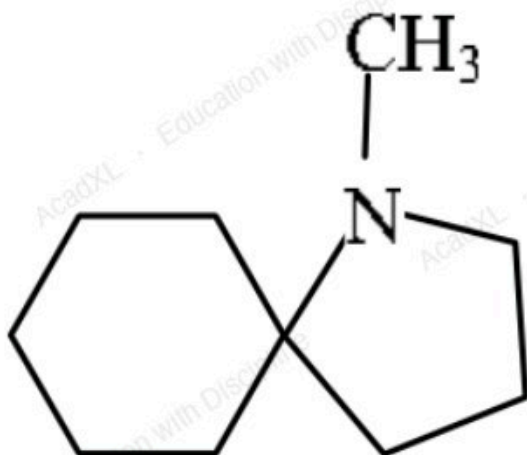
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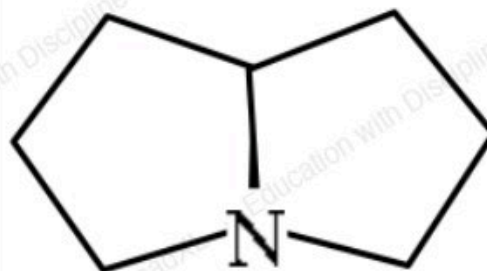
TM

20. The nitrogen atom in the cyclic compounds can be removed as trimethylamine by successive Hoffmann eliminations (involving exhaustive methylation followed by heating with AgOH). The amine which will require a greater number of Hoffmann eliminations is

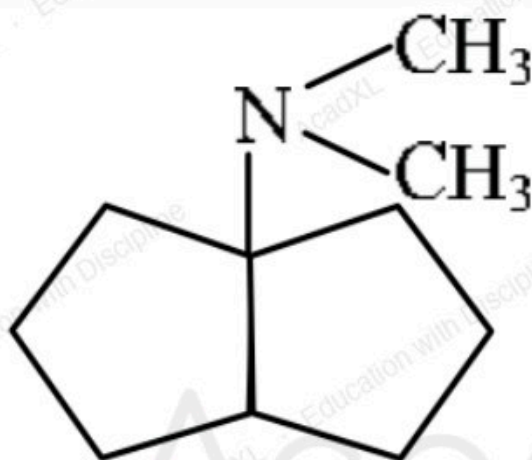
(A)



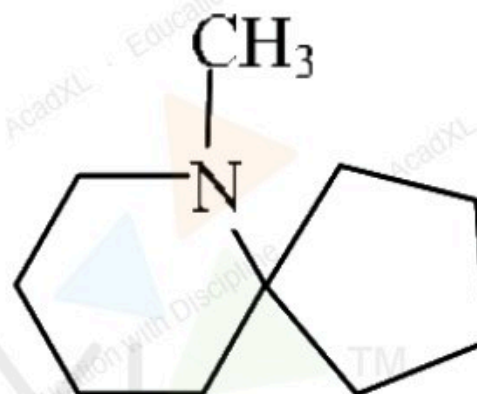
(B)



(C)



(D)

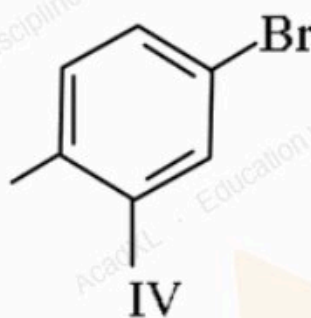
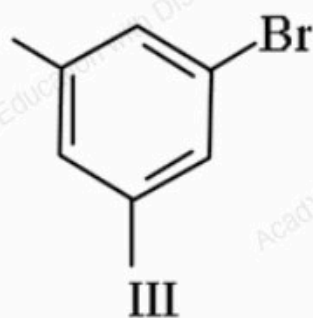
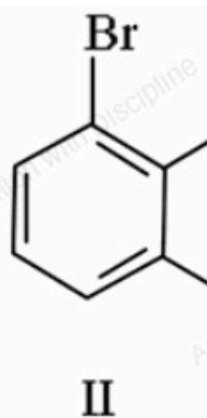
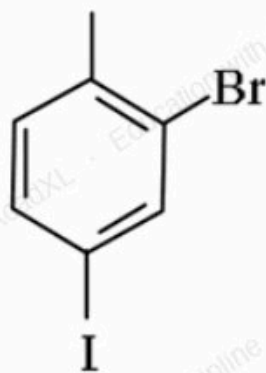


[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

21. $X \xrightarrow[\text{ether}]{\text{Mg}} Y \xrightarrow[\text{H}^+]{\text{Dry CO}_2} Z \xrightarrow{\text{hot KMnO}_4} P$. The two isomeric compounds which will give the same tricarboxylic acid after the above sequence of reactions are



(A) I and II

(B) III and IV

(C) I and IV

(D) II and III

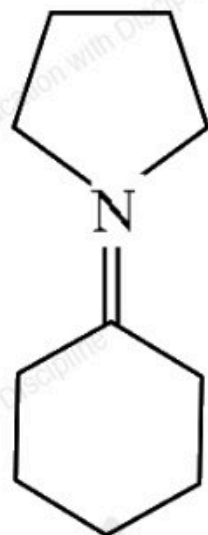
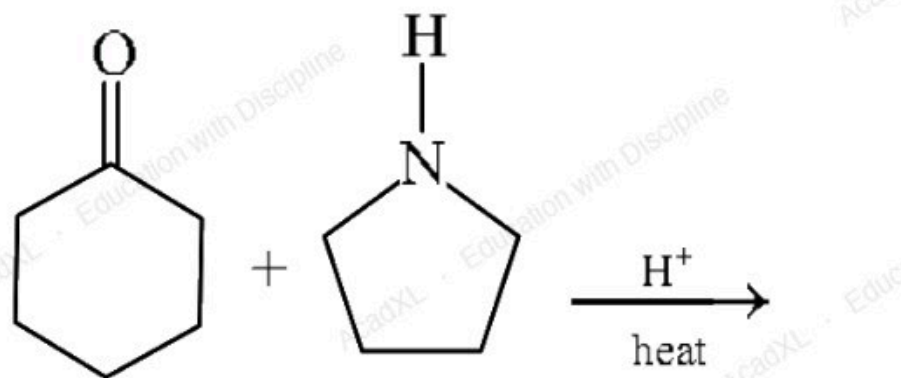
[3 marks, -1 for a wrong answer]

ANSWER: C

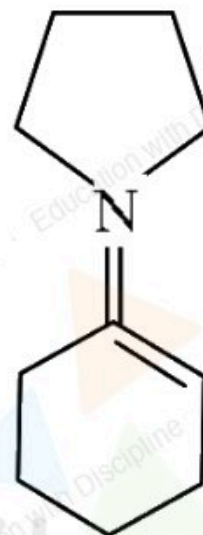
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22. The most favorable product of the following reaction is: cyclohexanone + pyrrolidine $\xrightarrow[\text{heat}]{\text{H}^+}$



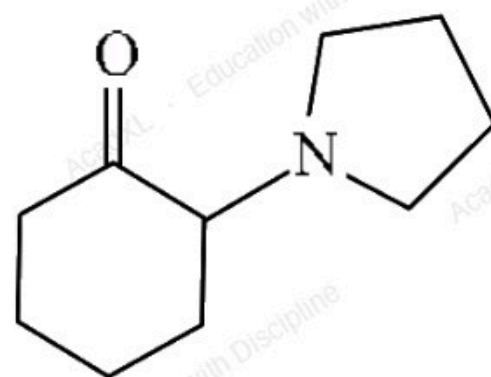
I



II



III



IV

(A) I

(B) II

(C) III

(D) IV

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

23. 3.7 dm^3 of 1 M NaOH solution is mixed 5 dm^3 of 0.3 M NaOH solution. The molarity of the resulting solution is

(A) 0.80 M (B) 0.10 M
(C) 0.73 M (D) 0.59 M

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

24. An electric current is passed through a silver voltameter connected to a water voltameter. 0.324 g of silver was deposited on the cathode of the silver voltameter. The volume of oxygen evolved at NTP is

(A) 5.6 cm^3 (B) 16.8 cm^3
(C) 11.2 cm^3 (D) 22.4 cm^3

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

25. The hydrolysis constant of 0.5 M ammonium benzoate is 6.25×10^{-6} . The percentage hydrolysis of the salt is

(A) 0.25 (B) 0.177
(C) 0.125 (D) 0.50

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

26. For a chemical reaction, $A + B \rightarrow C + D$, the following data was recorded: Set 1: initial $[A] = 4.00$, $[B] = 3.00$, rate = 0.10; Set 2: $[A] = 12.00$, $[B] = 3.00$, rate = 0.90; Set 3: $[A] = 12.00$, $[B] = 6.00$, rate = 0.90 (concentrations in mol dm^{-3} , rate in $\text{mol dm}^{-3} \text{s}^{-1}$). The correct rate expression for the reaction is

(A) $\text{rate} = k[A][B]$

(B) $\text{rate} = k[A]^2[B]^2$

(C) $\text{rate} = k[A]^2$

(D) $\text{rate} = k[A][B]^2$

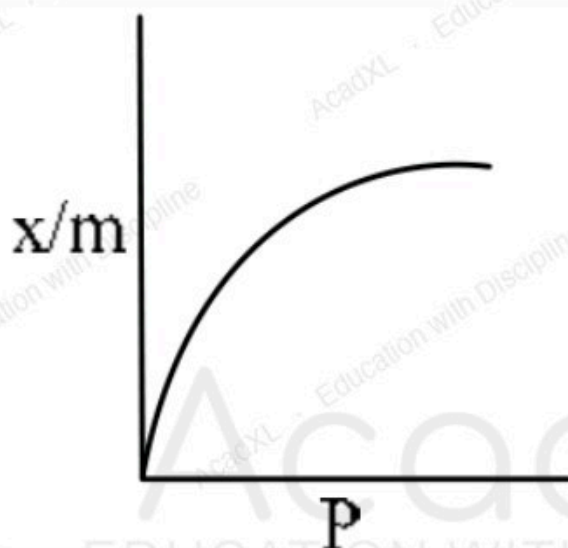
[3 marks, -1 for a wrong answer]

ANSWER: C

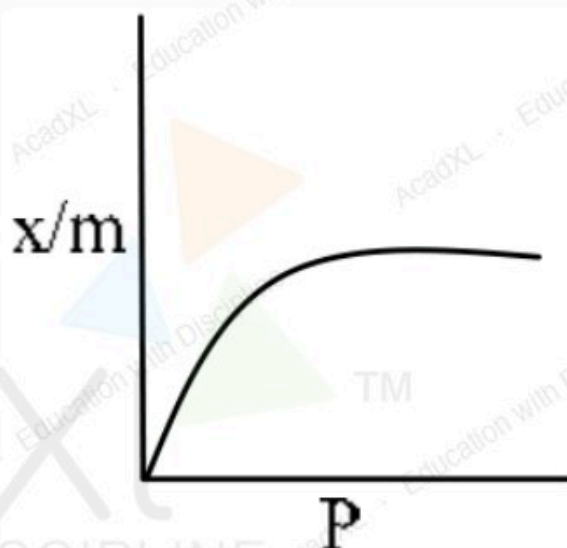
No solution stored for this question.

27. The plot representing langmuir's adsorption isotherm is

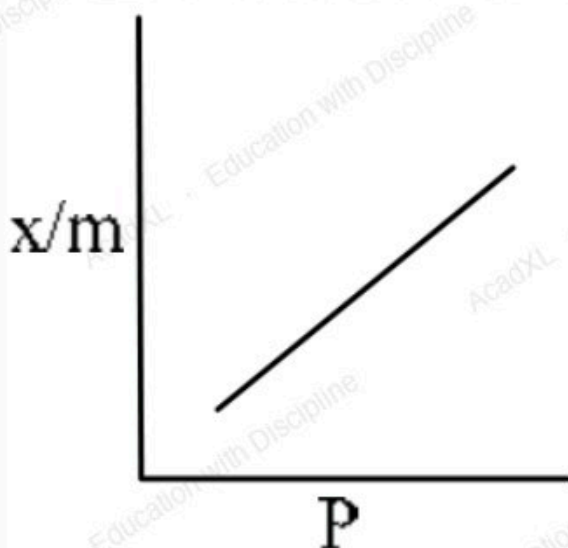
(A)



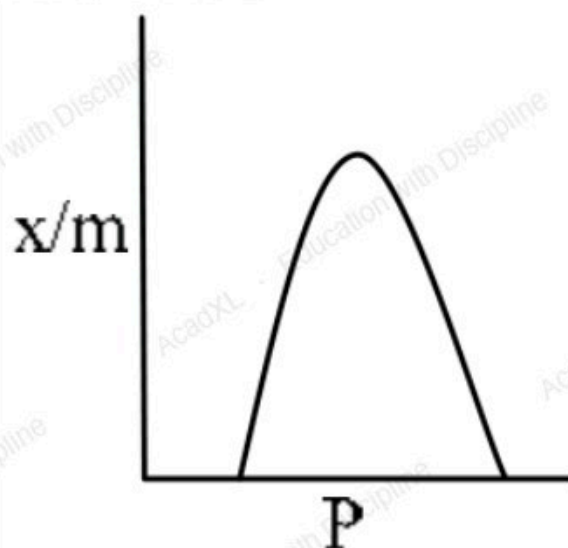
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

28. For a dilute solution, Raoult's law states that

- (A) the lowering of vapour pressure is equal to the mole fraction of the solute. (B) the relative lowering of vapour pressure is equal to the mole fraction of the solute
- (C) the vapour pressure of solution is equal to the mole fraction of solution. (D) the relative lowering of vapour pressure is proportional to the amount of solute in the solution

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

29. For the reaction $2\text{HI}_{(g)} \rightleftharpoons \text{H}_{2(g)} + \text{I}_{2(g)}$

- (A) $K_p = K_c$ (B) $K_p > K_c$
- (C) $K_p < K_c$ (D) $K_c = \sqrt{K_p}$

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

30. If the equilibrium constants of the reactions, $2\text{SO}_3 \rightleftharpoons 2\text{SO}_2 + \text{O}_2$ and $\text{SO}_2 + \frac{1}{2}\text{O}_2 \rightleftharpoons \text{SO}_3$ are K_1 and K_2 respectively, the correct relation between the two equilibrium constants is

- (A) $K_2 = (K_1)^{-1}$ (B) $K_2 = \frac{1}{\sqrt{K_1}}$
- (C) $K_2 = (1/K_1)^2$ (D) $K_2 = \sqrt{K_1}$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

31. The amount of copper (At. wt. = 63.54) deposited by passing 0.2 faraday of electricity through copper sulphate is

- (A) 3.175 g (B) 6.350 g
- (C) 31.75 g (D) 63.35 g

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

32. A radioactive element has half life of 14 hours. The fraction of the radioactive isotope which will disintegrate in 56 hours is

- (A) 0.75 (B) 0.875
(C) 0.9375 (D) 0.60

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

33. The fundamental particle responsible for keeping the nucleus together is

- (A) meson (B) muon
(C) positron (D) hyperon

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

34. The maximum number of electrons in $3d_{z^2}$ orbital is

- (A) 2 (B) 4
(C) 5 (D) 10

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

35. The ion which has 18 electrons in the outermost shell is

- (A) Cu^+ ($Z = 29$) (B) Al^{3+} ($Z = 13$)
(C) K^+ ($Z = 19$) (D) Th^{4+} ($Z = 90$)

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

36. Heating of a solution does not change

- (A) the normality of the solution (B) the molarity of the solution
(C) the molality of the solution (D) the density of the solution

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

37. The equilibrium constant K_c for the reaction $2\text{NaHCO}_{3(s)} \rightleftharpoons \text{Na}_2\text{CO}_3 + \text{CO}_{2(g)} + \text{H}_2\text{O}_{(g)}$ is represented by

(A) $K_c = \frac{[\text{Na}_2\text{CO}_3][\text{CO}_2][\text{H}_2\text{O}]}{[\text{NaHCO}_3]^2}$

(B) $K_c = \frac{[\text{Na}_2\text{CO}_3]}{[\text{NaHCO}_3]^2}$

(C) $K_c = [\text{CO}_2][\text{H}_2\text{O}]$

(D) $K_c = p_{\text{CO}_2} \times p_{\text{H}_2\text{O}}$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

38. When CO_2 dissolves in water, the following equilibrium is established

$\text{CO}_2 + 2\text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^{3+} + \text{HCO}_3^{1-}$. If the equilibrium constant for the reaction is 3.8×10^{-7} and $\text{pH} = 6$, the ratio $\frac{[\text{HCO}_3^{1-}]}{[\text{CO}_2]}$ will be

(A) 3.8×10^{-13}

(B) 3.8×10^{-1}

(C) 6.0

(D) 3.0

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

39. For a zero order reaction, the unit of rate constant is

(A) s^{-1}

(B) $\text{mol dm}^{-3} \text{s}^{-1}$

(C) $\text{dm}^3 \text{mol}^{-1} \text{s}^{-1}$

(D) $\text{mol}^2 \text{dm}^{-6} \text{s}^{-1}$

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

40. For the isobaric gaseous reaction, the enthalpy change given by

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

(B) $\Delta H = \Delta E + P\Delta V$

(C) $\Delta H = \Delta E + \Delta nP\Delta V$

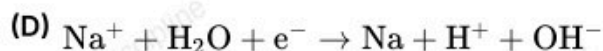
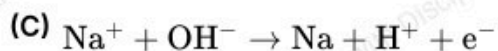
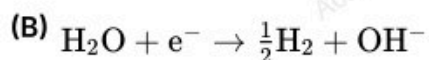
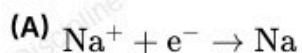
(D) $\Delta H = \Delta E + V\Delta P$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

41. When aqueous solution of sodium chloride is electrolysed using platinum electrode the cathode reaction is,



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

42. 0.14 g of a substance when burnt in oxygen yields 0.28 g of oxide. The substance is

(A) nitrogen

(B) carbon

(C) sulphur

(D) phosphorous

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

43. Carbonic acid, H_2CO_3 , is a diprotic acid for which $K_1 = 4.2 \times 10^{-7}$ and $K_2 = 4.7 \times 10^{-11}$. The solution which will have a pH closest to 9 is

(A) 0.1 M H_2CO_3

(B) 0.1 M Na_2CO_3

(C) 0.1 M NaHCO_3

(D) 0.1 M $\text{NaHCO}_3 + 0.1 \text{ M Na}_2\text{CO}_3$

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

44. For a face centered cubic lattice, the unit cell content is

(A) 1

(B) 2

(C) 3

(D) 4

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

45. The hybridization of the atomic orbitals of sulphur in SO_3 , SO_4^{2-} and SF_4 are respectively

(A) sp , sp^3 , sp^2

(B) sp , sp^2 , sp^3d

(C) sp^2 , sp , sp^3

(D) sp^2 , sp^3 , sp^3d

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

46. The number of molecules of hydration present in 252 mg of oxalic acid is

(A) 2.68×10^{18}

(B) 2.52×10^{21}

(C) 1.83×10^{24}

(D) 2.4×10^{21}

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

47. The ozone hole in the upper atmospheres of the earth is due to the breakdown of ozone to oxygen.
The reaction is catalyzed by

(A) chlorofluorocarbons

(B) oxygen generated during the reaction

(C) carbon dioxide present in the atmosphere

(D) chlorine formed by the decomposition of chlorofluorocarbons

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

48. The compound with the lowest oxidation state of iron is

(A) Fe_2O

(B) Fe_3O_4

(C) $\text{K}_3\text{Fe}(\text{CN})_6$

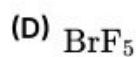
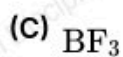
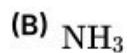
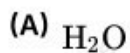
(D) $\text{K}_4\text{Fe}(\text{CN})_6$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

49. The molecule which does not have a net dipole moment is



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

50. The electron-pair geometry of the central oxygen atom of ozone is

(A) linear

(B) trigonal planar

(C) tetrahedral

(D) trigonal bipyramidal

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

51. The molecular geometry for ammonia is

(A) saw horse

(B) trigonal planar

(C) tetrahedral

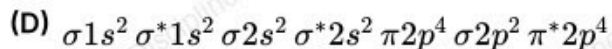
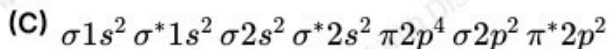
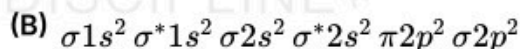
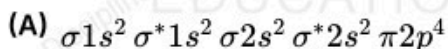
(D) pyramidal

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

52. The sequence of molecular orbitals for the carbide ion (C_2^{2-}) is

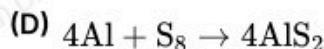
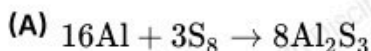


[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

53. The correct balanced chemical equation for the reaction between Al and S is



[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

54. The standard electrode potential values for four metals K, L, M and N are respectively, -3.05 , -1.66 , -0.40 and $+0.80$ V. The best reducing agent is

- (A) L (B) K
(C) N (D) M

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

55. The strongest Bronsted base among the following compounds is

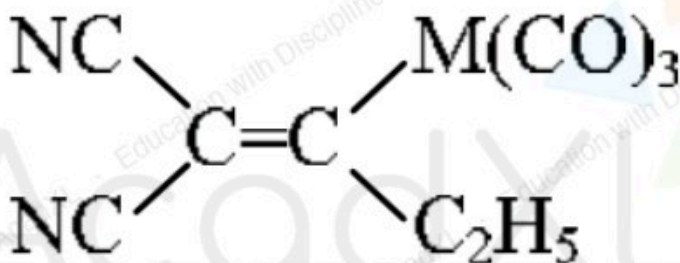
- (A) NaCH_3 (B) NaOH
(C) NaF (D) NaNH_2

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

56. The number of sigma and pi bonds in the following compound is



- (A) 19, 11 (B) 19, 05
(C) 13, 11 (D) 07, 06

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

57. The aqua ion which will be almost colorless is

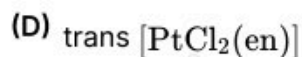
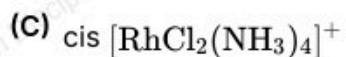
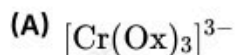
- (A) Cu^{2+} (B) Cr^{2+}
(C) Ti^{4+} (D) Mn^{2+}

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

58. Among the following, the chiral complex is



[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

59. MnO_4^- is of intense pink colour, though Mn is in +VII oxidation state. This is due

(A) d-d transition

(B) charge transfer when Mn gives electron to oxygen

(C) charge transfer when oxygen gives its electrons to Mn making it +VI

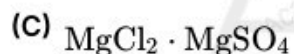
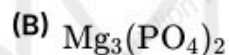
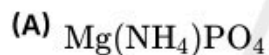
(D) absorption of IR frequencies

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

60. MgSO_4 on reaction with NH_4OH and Na_2HPO_4 forms a white crystalline precipitate. The formula of the precipitate is

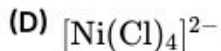
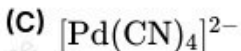
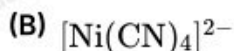


[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

61. The species having tetrahedral shape is



[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

62. The types of isomerism shown by $\text{Co}(\text{NH}_3)_4\text{Br}_2\text{Cl}$ are

- (A) Geometrical and ionization (B) Optical and ionization
(C) Geometrical and optical (D) Geometrical only

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

63. The silicates formed from $[\text{SiO}_4]^{4-}$ tetrahedral units by sharing three oxygen atoms are

- (A) Sheet silicates (B) Pyrosilicates
(C) Linear Chain silicates (D) Three dimensional silicates

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

64. The species containing the maximum number of lone pairs in the central atom is

- (A) ClO_3^- (B) XeF_4
(C) SF_4 (D) I_3^-

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

65. The nucleic acid which bears a codon in its structure is

- (A) r RNA (B) t RNA
(C) m RNA (D) DNA

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

66. Protein synthesis does not involve

- (A) amino acids (B) t RNA
(C) m RNA (D) DNA

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

67. The most likely change occurring in a protein sample when treated with 6M HCl is

- (A) formation of disulphide bond
- (B) formation of peptide bond
- (C) hydrolysis of peptide bond
- (D) oxidation of disulphide bond

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

68. The order of the energy released by biological oxidation of equal amounts (moles) of glucose, sucrose and starch is

- (A) starch > sucrose > glucose
- (B) starch > glucose > sucrose
- (C) sucrose > glucose > starch
- (D) glucose > sucrose > starch

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

69. Precipitation of protein from a solution is generally achieved by using ammonium sulphate solution this could be a result of

- (A) neutralization of the charge of the protein
- (B) increase in hydrophilicity of the protein
- (C) increase in hydrophobicity of the protein
- (D) formation of salt protein complex

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

70. Enzymatic break down of cellulose will yield monomers of

- (A) Galactose
- (B) Glucose
- (C) Fructose
- (D) Ribose

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

71. The trend of isoelectric point (PI) of the amino acids, glycine, lysine and aspartic acid is

- (A) glycine > lysine > aspartic acid
- (B) aspartic acid > lysine > glycine
- (C) aspartic acid > glycine > lysine
- (D) lysine > aspartic acid > glycine

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

72. The chemical substance which can be used to isolate a protein present inside the cell membrane is

- (A) Chelating agent (B) Dilute acid
(C) Detergent (D) Urea solutions

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

73. The chemical force playing an important role in binding of codon to anticodon is

- (A) covalent bond (B) co-ordinate bond
(C) hydrogen bond (D) hydrophobic bond

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

74. The ionization of benzoic acid is represented by the equation

$\text{C}_6\text{H}_5\text{COOH}_{(\text{aq})} \rightleftharpoons \text{H}^+_{(\text{aq})} + \text{C}_6\text{H}_5\text{COO}^-_{(\text{aq})}$. If a 0.045 M solution of benzoic acid has an

$[\text{H}^+] = 1.7 \times 10^{-3}$, then the K_a of benzoic acid is

- (A) 7.7×10^{-5} (B) 6.4×10^{-5}
(C) 3.8×10^{-2} (D) 8.4×10^{-1}

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

75. If the K_{sp} of CaF_2 at 25°C is 1.6×10^{-10} , then the number of moles of the salt that must be dissolved in 2.0 L of water at 25°C to form a saturated solution is

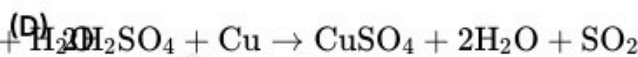
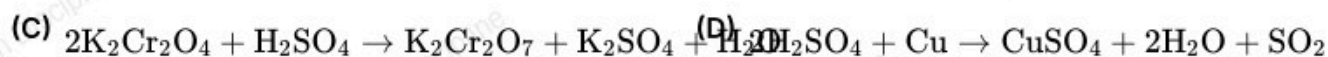
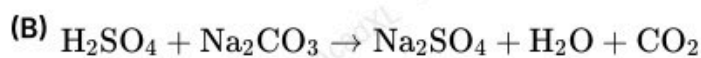
- (A) 2.6×10^{-2} mol (B) 1.3×10^{-3} mol
(C) 6.8×10^{-4} mol (D) 3.4×10^{-4} mol

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

76. The oxidation-reduction reaction among the following is



[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

77. Silver metal reacts with nitric acid according to the equation

$3\text{Ag(s)} + 4\text{HNO}_3\text{(aq)} \rightarrow 3\text{AgNO}_3\text{(aq)} + \text{NO(g)} + 2\text{H}_2\text{O(l)}$. The volume of 1.15 M $\text{HNO}_3\text{(aq)}$ required to react with 0.784 g of silver is

(A) 4.74 mL

(B) 6.32 mL

(C) 8.43 mL

(D) 25.3 mL

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

78. $\text{P}_4\text{(s)} + 3\text{OH}^-\text{(aq)} + 3\text{H}_2\text{O(l)} \rightarrow \text{PH}_3\text{(g)} + 3\text{H}_2\text{PO}_2^-\text{(aq)}$. In the above equation, the species H_2PO_2^- getting oxidized and reduced respectively are

(A) P_4 and OH^-

(B) OH^- and P_4

(C) P_4 and H_2O

(D) P_4 and P_4

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

79. $10\text{Cl}^-\text{(aq)} + 2\text{MnO}_4^-\text{(aq)} + 16\text{H}^+\text{(aq)} \rightarrow 5\text{Cl}_2\text{(g)} + 2\text{Mn}^{2+}\text{(aq)} + 8\text{H}_2\text{O(l)}$. The value of E° for the above reaction at 25°C is 0.15 V. Hence, the value of K for this reaction is

(A) 2.4×10^{25}

(B) 4.9×10^{12}

(C) 1.2×10^5

(D) 3.4×10^2

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

80. The magnetic moment of a transition metal ion is found to be 3.87 Bohr magneton (BM). The number of unpaired electrons present in it is

(A) 2

(B) 3

(C) 4

(D) 5

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

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Answer key

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

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