

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

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NSEC 2014

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

1. The compound which undergoes hydrolysis on just warming with water and forms the corresponding hydroxyl derivative is

- (A) 2,4,6-trinitrochlorobenzene (B) 2-chloro-1-butene
(C) 2-chloro-2-methylbutane (D) 2,4-dimethoxychlorobenzene

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

2. The pair of compounds that will not react with each other in an aqueous solution, at room temperature is

- (A) $\text{FeCl}_3, \text{SnCl}_2$ (B) $\text{HgCl}_2, \text{SnCl}_2$
(C) $\text{FeCl}_2, \text{SnCl}_2$ (D) FeCl_3, KI

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

3. At 700 K, for the reaction $2\text{SO}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{SO}_3(\text{g})$ the K_p is 3.2×10^4 . At the same temperature the K_p for the reaction $\text{SO}_3(\text{g}) \rightleftharpoons \text{SO}_2(\text{g}) + 0.5\text{O}_2(\text{g})$ is

- (A) 3.125×10^{-5} (B) 5.59×10^{-3}
(C) 1.79×10^4 (D) 1.79×10^{-2}

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

4. Amylose and cellulose are polymers of glucose in which glucose units are joined to each other respectively by linkages of the type

(A) α, β

(B) β, β

(C) α, α

(D) $\alpha\beta, \beta$

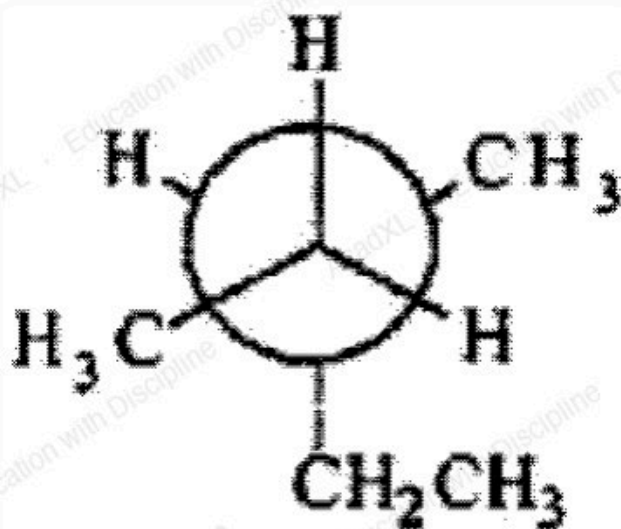
[3 marks, -1 for a wrong answer]

ANSWER: A, C

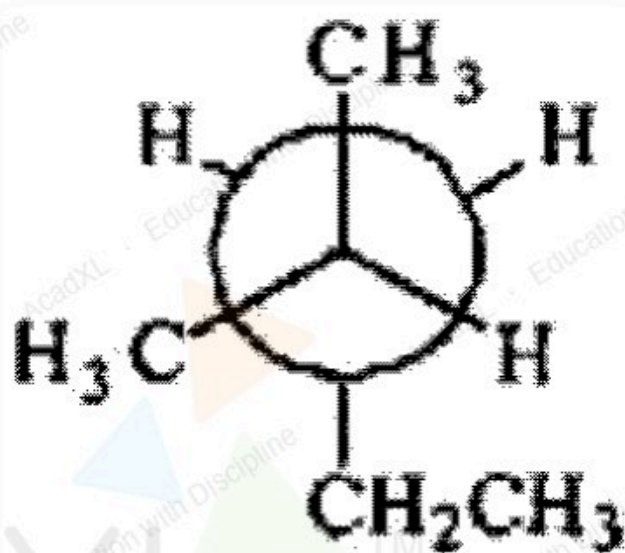
No solution stored for this question.

5. 2-methylpentane is

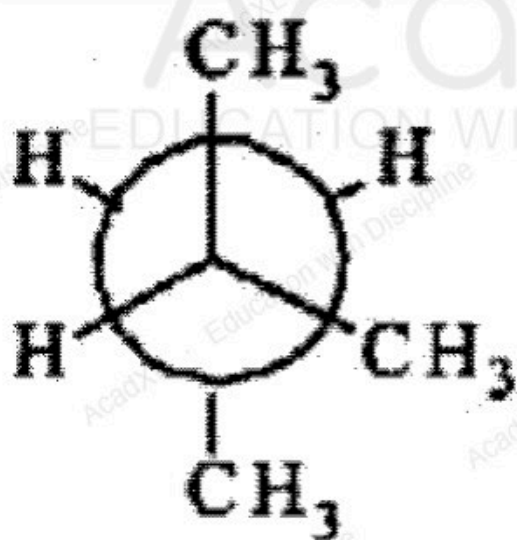
(A)



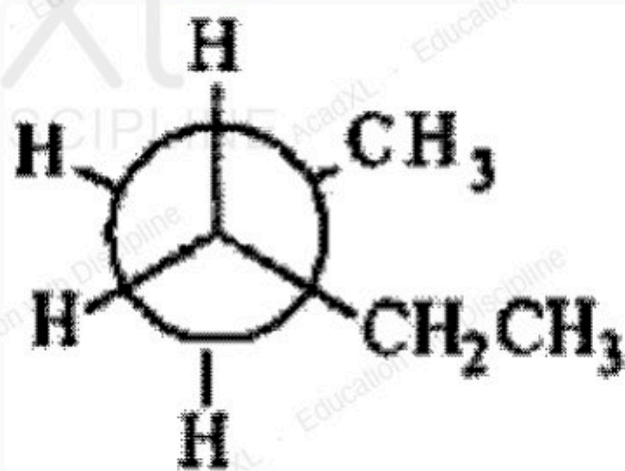
(B)



(C)



(D)

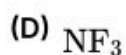
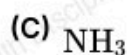
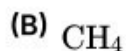
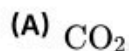


[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

6. The molecule having the highest dipole moment is



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

7. Two sample A and B of an ideal gas, initially at same temperature and pressure, are compressed from volume V to $V/2$, isothermally for A and adiabatically for B. The final pressure of A will be

(A) greater than that of B

(B) less than that of B

(C) twice that of B

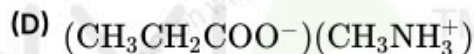
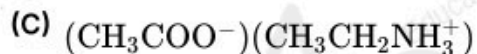
(D) equal to that at B

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

8. A nitrile X is treated with LiAlH_4 to obtain compound Y ($\text{C}_2\text{H}_7\text{N}$). In a separate reaction X is hydrolyzed in an acid medium to obtain Z. The product obtained after mixing Y and Z will be



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

9. pH of a saturated solution of magnesium hydroxide in water at 298 K is 10.5. The solubility of the hydroxide in water at 298 K is

(A) $1.58 \times 10^{-4} \text{ mol L}^{-1}$

(B) $1.58 \times 10^{-11} \text{ mol L}^{-1}$

(C) $3.16 \times 10^{-4} \text{ mol L}^{-1}$

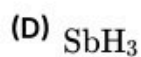
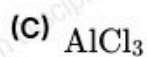
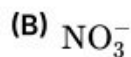
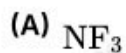
(D) $9.98 \times 10^{-8} \text{ mol L}^{-1}$

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

10. The species which has triangular planar geometry is

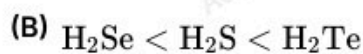
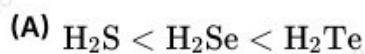


[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

11. The order of acidity in aqueous solution for the following acids is

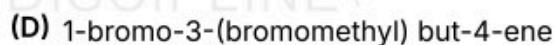
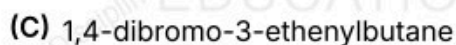
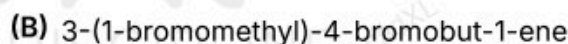
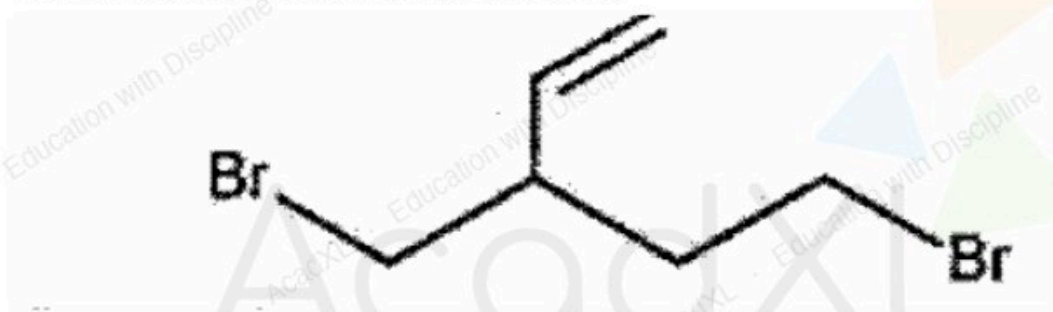


[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

12. The IUPAC name of the following compound is

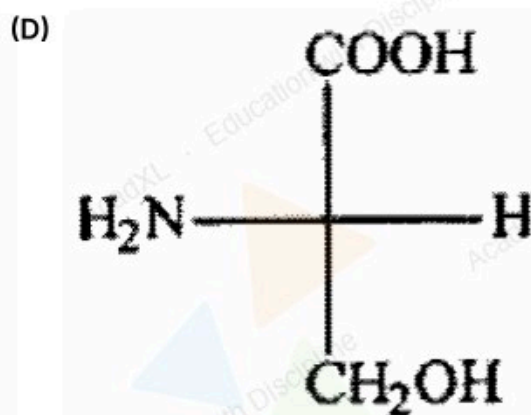
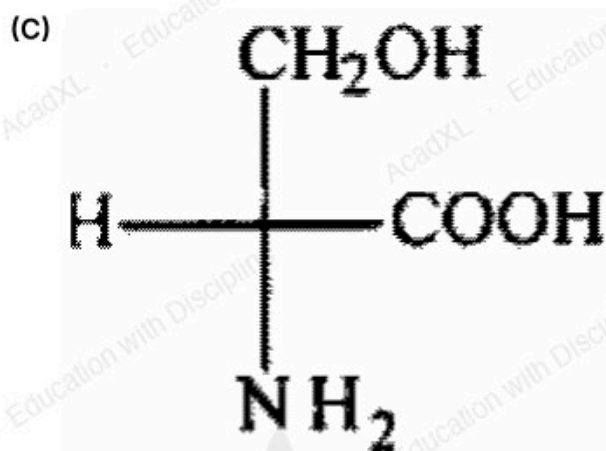
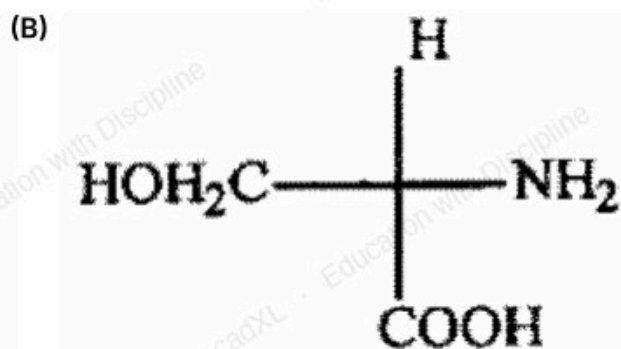
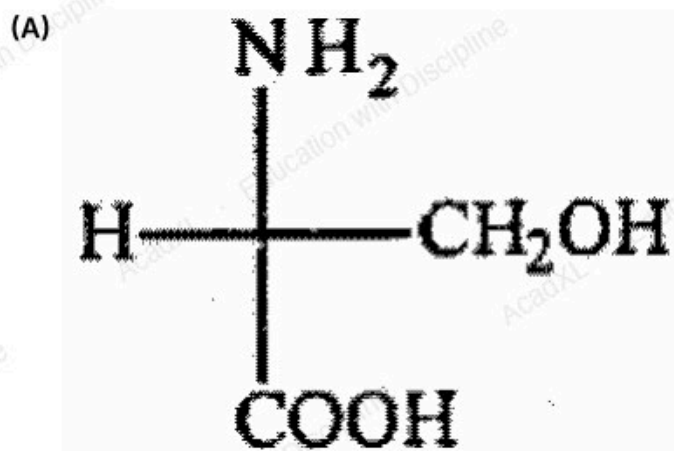


[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

13. Serine ($\text{HOCH}_2\text{CH}(\text{NH}_2)\text{COOH}$) is an essential amino acid. The correct Fischer projection of serine is

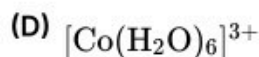
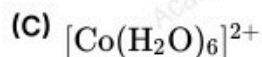
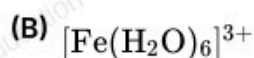
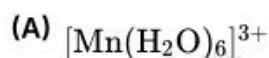


[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

14. The complex having zero crystal field stabilization energy is



[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

15. Solubility product of silver chloride and silver thiocyanate are 1.2×10^{-10} and 7.1×10^{-13}

respectively. The equilibrium constant for the reaction



(A) 0.0625

(B) 169

(C) 13

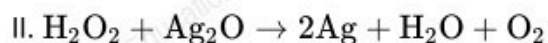
(D) 1.40×10^{-4}

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

16. I. $5\text{H}_2\text{O}_2 + 2\text{MnO}_4^- + 6\text{H}^+ \rightarrow 2\text{Mn}^{2+} + 5\text{O}_2 + 8\text{H}_2\text{O}$



The role of hydrogen peroxide in the above reaction is

(A) oxidising in I and reducing in II

(B) reducing in I and oxidising in II

(C) reducing in I as well as in II

(D) oxidising in I as well as in II

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

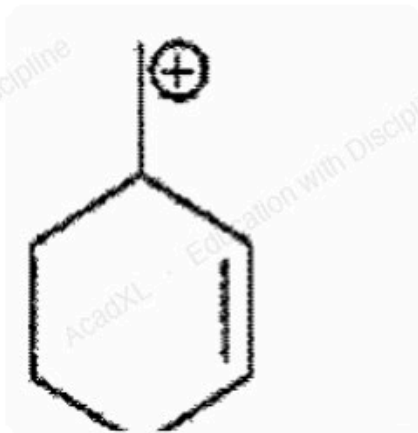
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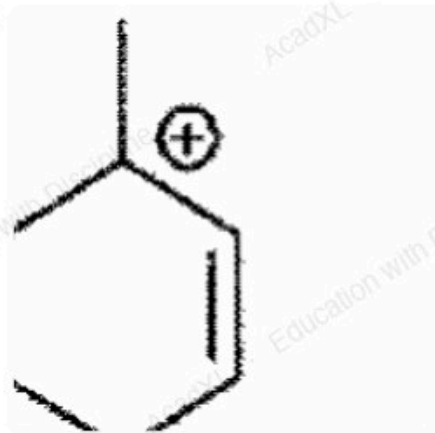
TM

17. The most stable carbocation is

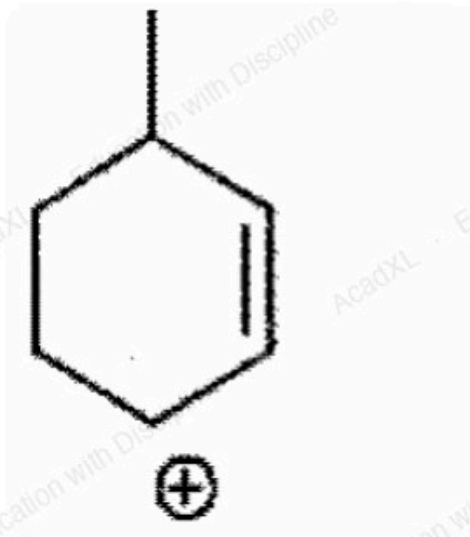
(A)



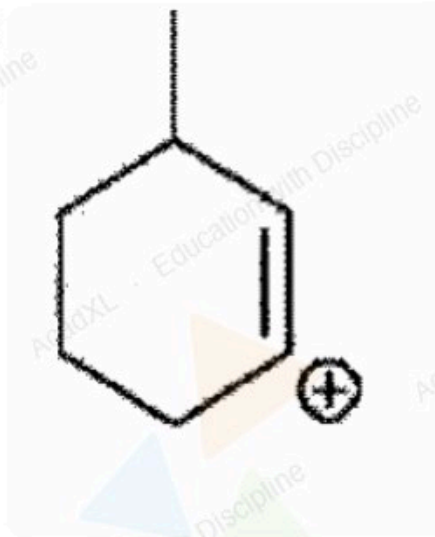
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

18. Helium can be singly ionized by losing one electron to become the He^+ cation. Which of the following statement is true concerning this helium cation?

(A) The line spectrum of this helium cation will resemble the line spectrum of a hydrogen atom.

(B) The line spectrum of this helium cation will resemble the line spectrum of a lithium cation.

(C) The line spectrum of this helium cation will remain the same as for unionized helium.

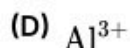
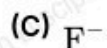
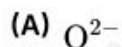
(D) The line spectrum of this helium cation will resemble the line spectrum of a hydrogen ion.

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

19. Of the following, the ion with the largest size is

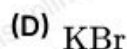
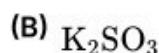
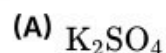


[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

20. The colorless salt that gives white precipitate with $BaCl_2$ in aqueous HCl is

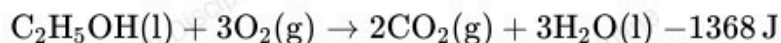


[3 marks, -1 for a wrong answer]

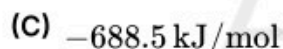
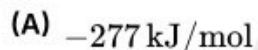
ANSWER: A

No solution stored for this question.

21. The heat of formation of ethanol, from the following data is



$$\Delta H_f CO_2(g) = 393.5 \text{ kJ/mol}; \Delta H_f H_2O(l) = -286 \text{ kJ/mol}$$

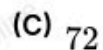
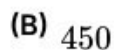
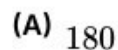


[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

22. Osmotic pressure of a 2 % w/v solution of glucose is same as 5% w/v solution of a nonvolatile non-electrolyte solute. The molar mass of the solute is



[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

23. 50 g of sucrose is hydrolysed to a mixture of glucose and fructose. Sucrose is dextrorotatory, however the mixture formed is laevorotatory. This is because

- (A) more amount of β -D-fructose is formed than that of β -D-glucose
- (B) β -D-glucose undergoes inversion of configuration
- (C) β -D-fructose and β -D-glucose undergo inversion to their α -anomers
- (D) laevorotation of β -D-fructose is more than dextrorotation of β -D-glucose.

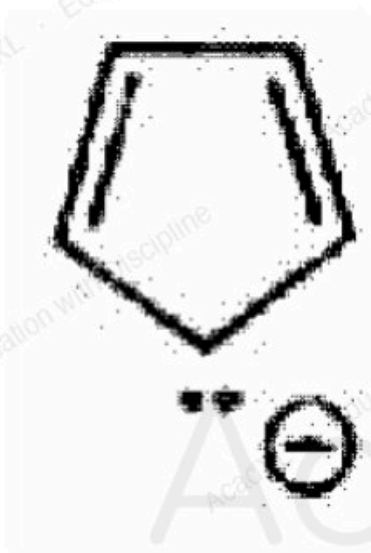
[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

24. Among the following compound that is not aromatic is

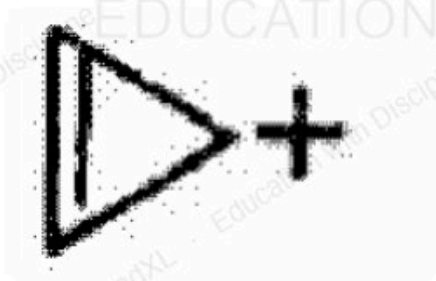
(A)



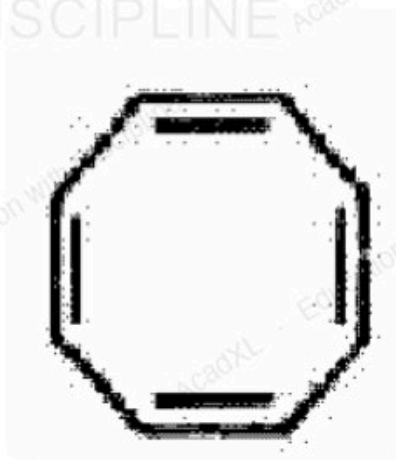
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

25. The magnetic moment of a divalent ion of an element with atomic number 24 in an aqueous solution is

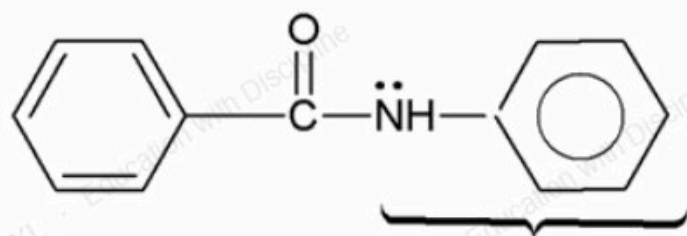
- (A) 4.9 BM (B) 2.45 BM
(C) 2.83 BM (D) 1.73 BM

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

26. The major product of the following reaction is



- (A) (B)
(C) (D)

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

27. The correct order of stability for the following species is

- (A) $\text{Li}_2 < \text{He}_2^+ < \text{O}_2^+ < \text{C}_2$ (B) $\text{C}_2 < \text{O}_2^+ < \text{Li}_2 < \text{He}_2^+$
(C) $\text{He}_2^+ < \text{Li}_2 < \text{C}_2 < \text{O}_2^+$ (D) $\text{O}_2^+ < \text{C}_2 < \text{Li}_2 < \text{He}_2^+$

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

28. The colligative property used in the determination of molar mass of a polymer is

- (A) lowering of the vapour pressure
(B) elevation in the boiling point
(C) depression in the freezing point
(D) osmotic pressure.

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

29. From the following the species that are isoelectronic are

I. NH_3 II. CH_3^+ III. NH_2^- IV. NH_4^+

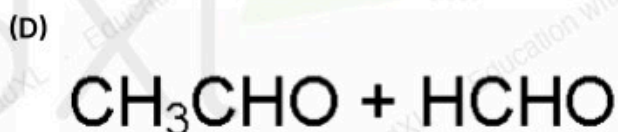
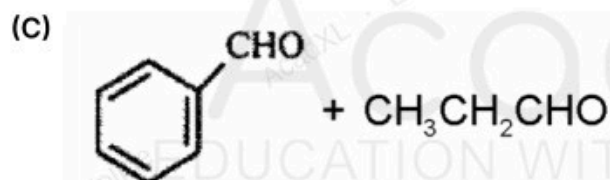
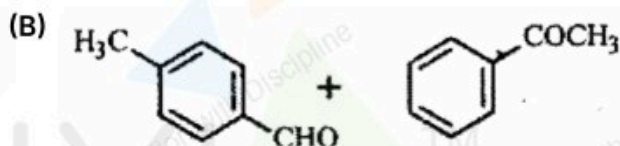
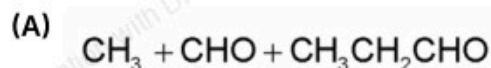
- (A) (I), (II), (III)
(B) (II), (III), (IV)
(C) (I), (II), (IV)
(D) (I), (III), (IV)

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

30. The pair of equimolar compounds that would give a **single** condensation product when treated with an alkali is



[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

31. In electrophoresis,

- (A) the colloidal particles migrate in an applied electric field.
(B) the medium migrates in an applied electric field
(C) both colloidal particles and the medium migrate.
(D) neither the particles nor the medium migrate.

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

32. When a person suffers from typhoid, the metabolic process stimulates in the body to fight against this disease is synthesis of

- (A) Lipid (B) carbohydrate
(C) protein (D) DNA

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

33. If a weak base has the dissociation constant, K_b , then the value of the dissociation constant, K_a , of its conjugate acid is given by

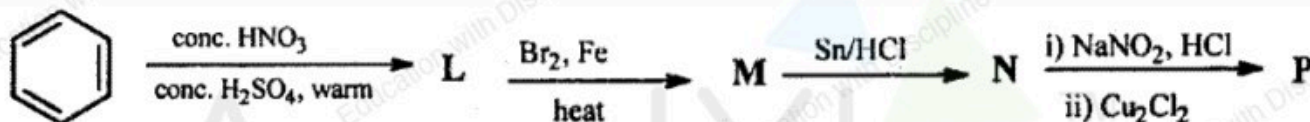
- (A) $1/K_b$ (B) K_w/K_b
(C) K_b/K_w (D) $K_w K_b$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

34. The product P obtained through the following sequence of reactions is



- (A) 3-chloroaniline (B) 4-bromochlorobenzene
(C) 3-bromochlorobenzene (D) 3-bromoaniline

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

35. Real gases behave ideally at

- (A) low pressure and low temperature (B) high pressure and low temperature
(C) low pressure and high temperature (D) high pressure and high temperature

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

36. In the cyanide extraction process of silver from Argentite ore, the oxidizing and the reducing agents used are respectively

(A) O_2 and CO

(B) O_2 and Zn dust

(C) HNO_3 and Zn dust

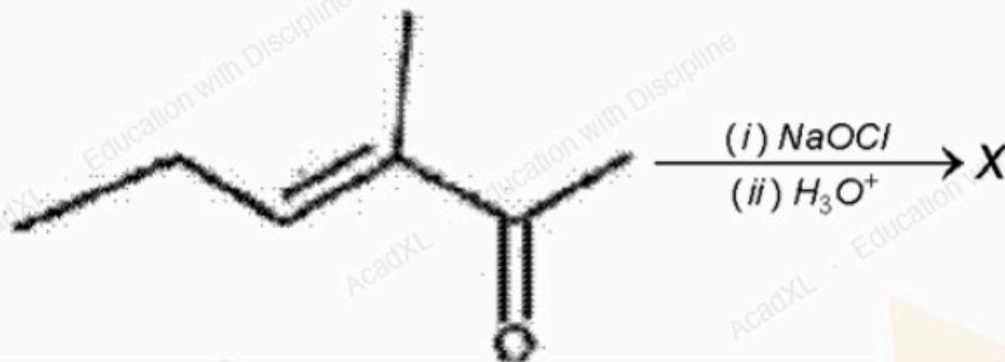
(D) HNO_3 and CO

[3 marks, -1 for a wrong answer]

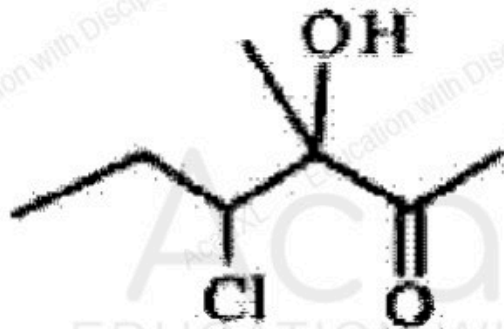
ANSWER: B

No solution stored for this question.

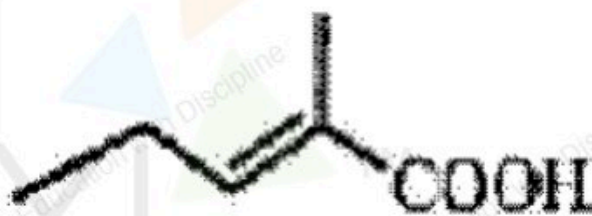
37. The main product X formed in the following reactions is



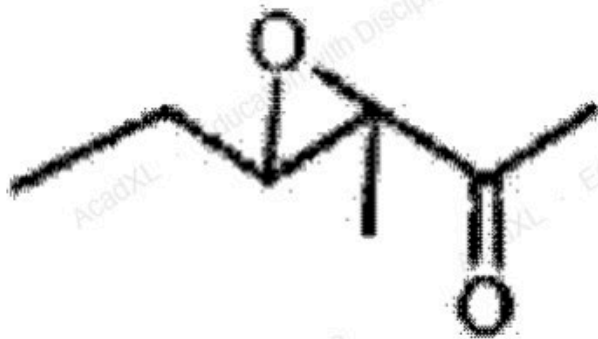
(A)



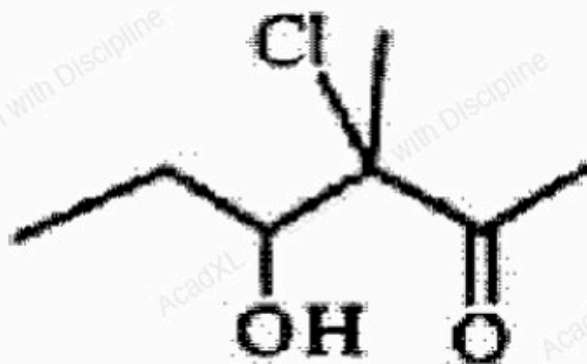
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

38. Out of the following metal extraction processes, those in which carbon – based reduction methods are not used are

(I) Sn from SnO_2 (II) Fe from Fe_2O_3 (III) Al from Al_2O_3 (IV) Mg from $\text{MgCO}_3 \cdot \text{CaCO}_3$

(A) (I) and (IV)

(B) (II) and (III)

(C) (III) and (IV)

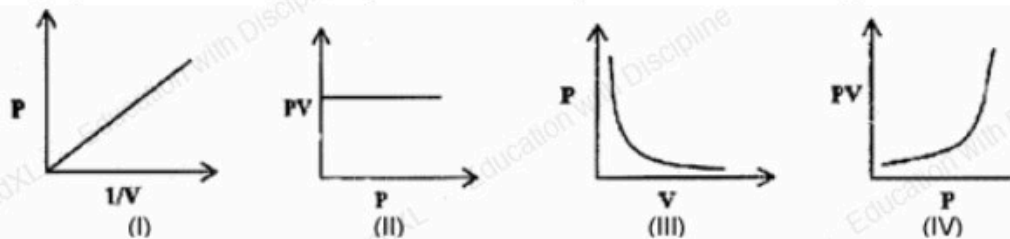
(D) (II) and (IV)

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

39. The graph that **wrongly** represents the Boyle's law of an ideal gas is



(A) II

(B) I

(C) IV

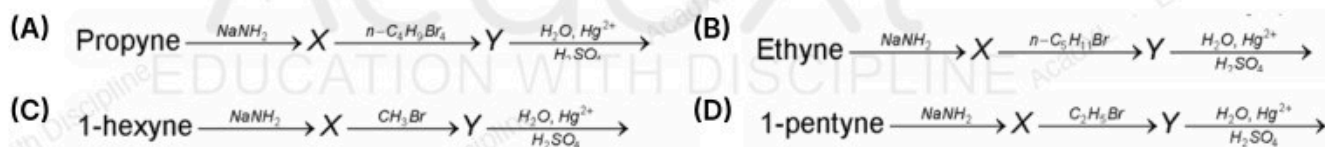
(D) III

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

40. The best sequence of reactions to prepare 2-heptanone is



[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

41. Approximate numbers of moles of hydrogen atoms in 1.006×10^{23} molecules of diethyl ether are

(A) 0.16

(B) 6

(C) 1.67

(D) 3

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

42. Upon long standing concentrated HNO_3

- (A) remains colourless, but gives out NO (B) turns yellow brown due to formation NO_2
(C) turns yellow brown due to the formation of N_2O_4 (D) remains colourless, but gives N_2O

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

43. The sugars that are produced on hydrolysis of DNA and RNA are

- (A) epimers (B) two different sugars
(C) positional isomers (D) diastereomers

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

44. When a nucleophile attacks a carbonyl group to form an intermediate, the hybridisation of the carbon atom changes from

- (A) sp^3 to sp^2 (B) sp^2 to sp
(C) sp to sp^2 (D) sp^2 to sp^3

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

45. Aluminum carbide (Al_4C_3) liberates methane on treatment with water. The grams of aluminum carbide required to produce 11.2 L of methane under STP conditions is [Given $\text{Al} = 27$]

- (A) 48 (B) 72
(C) 144 (D) 24

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

46. The correct statement for crystalline CsI_3 is

- (A) it contains Cs^+ , I^- and molecular I_2 (B) it is a covalent compound
(C) it contains Cs^+ and I_3^- (D) it contains Cs^{3+} and I^-

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

47. The product X formed in the following reaction is



- (A) benzene (B) methoxybenzene
(C) phenol (D) toluene

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

48. Ionic salt AX grows in face centered cubic lattice with cell length a . The ratio r_{A^+}/r_{X^-} for this salt will be

- (A) 0.155 (B) 0.225
(C) 0.414 (D) 0.732

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

49. The hybridization of boron in the stable borane having the lowest molecular weight is –

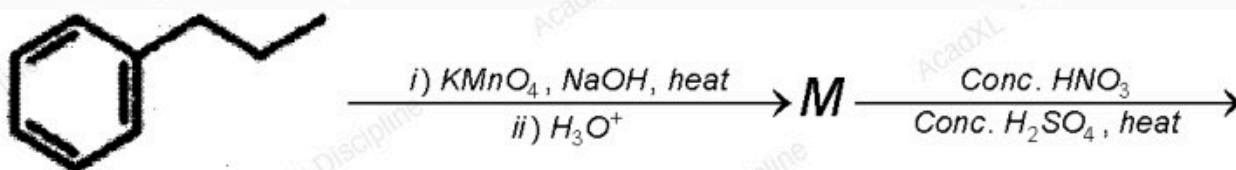
- (A) sp^2 (B) sp^3
(C) sp (D) sp^3d

[3 marks, -1 for a wrong answer]

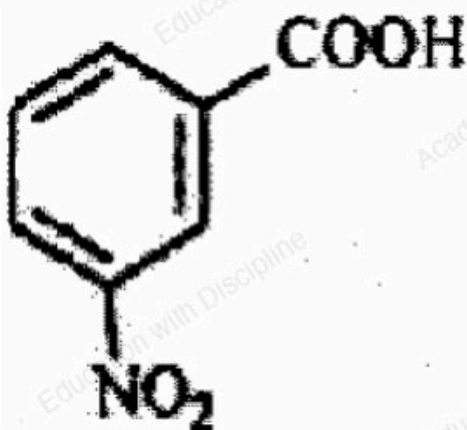
ANSWER: B

No solution stored for this question.

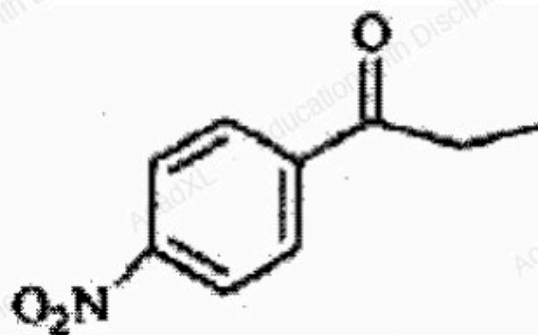
50. The product 'N' of the following reaction is



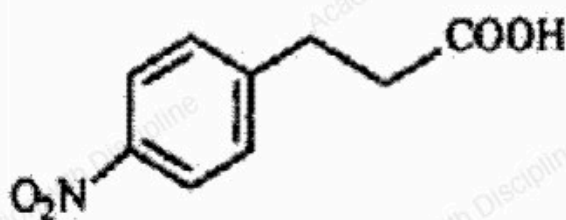
(A)



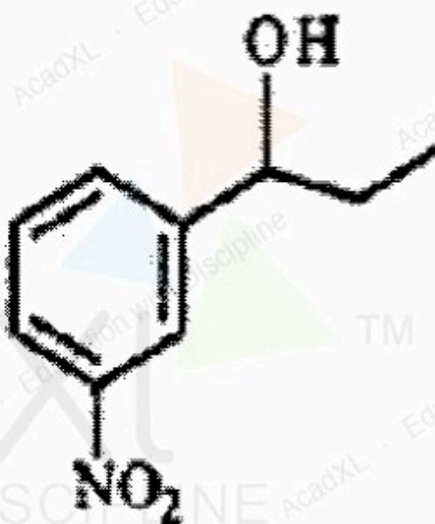
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

51. The specific gravity of a HNO_3 solution is 1.42 and it is 70% w/w. The molar concentration of HNO_3 is

(A) 15.8

(B) 31.6

(C) 11.1

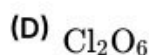
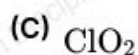
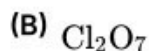
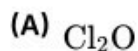
(D) 14.2

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

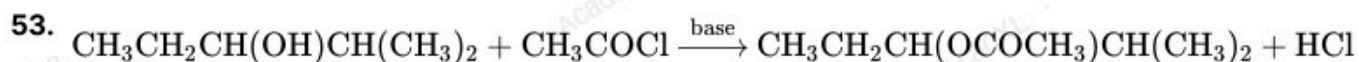
52. Bleaching powder contains a salt of an oxoacid as one of its components. The anhydride of that acid is



[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.



In the above reaction, if the reactant alcohol is pure R-isomers, the product would

(A) have configuration inverted at the chiral atom (B) be a racemic mixture

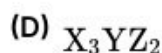
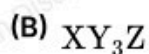
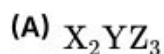
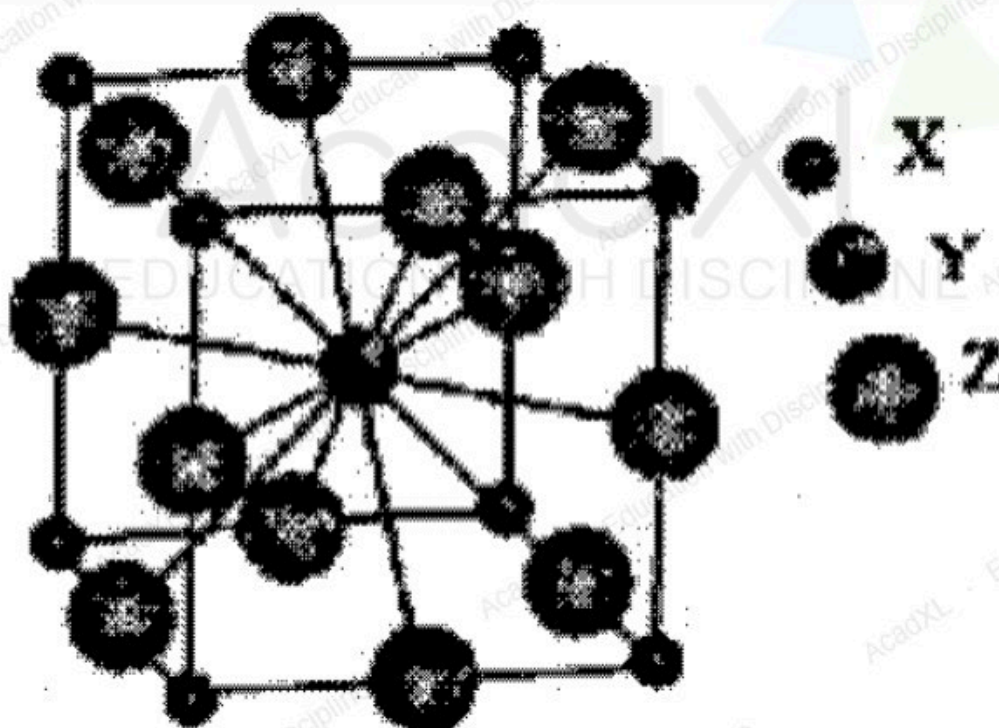
(C) have the same configuration at the chiral atom (D) be optically inactive

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

54. The unit cell of a compound made up of the three elements X, Y and Z is given below. The formula of this compound is :



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

55. N_2 gas stored in a cylinder, fixed with a movable piston, undergoes adiabatic expansion. The statement that is true for the given situation is

- (A) $q = w$ (B) $\Delta U = w$
 (C) $\Delta U = 0$ (D) $\Delta U = q$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

56. For the following cell at 25°C the EMF is – [If $E_{M^{2+}/M}^\circ = 0.347\text{ V}$]



- (A) 0.089 V (B) 0.598 V
 (C) 0.251 V (D) 0.764 V

[3 marks, -1 for a wrong answer] · officially dropped — full marks to all

ANSWER: DROPPED

[Officially dropped / bonus — full marks awarded.]

57. Which of the following hydrogen halides react with $AgNO_3$ to give a precipitate that dissolves in hypo solution?

(I) HCl (II) HF (III) HI (IV) HBr

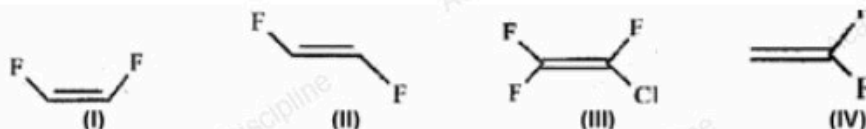
- (A) (III), (I), (II) (B) (I), (III), (IV)
 (C) (IV), (II), (I) (D) (II), (IV), (III)

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

58. The correct order of dipole moment for the following molecules is



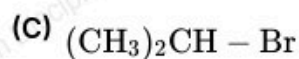
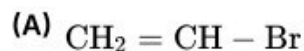
- (A) $IV > I > III > II$ (B) $I > IV > III > II$
 (C) $III > I > II > IV$ (D) $II > III > IV > I$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

59. The compound that is most reactive with alcoholic KOH is



[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

60. The enthalpy of vaporization of benzene is $+35.3 \text{ kJ/mol}$ at its boiling point of 80°C . The entropy change in the transition of vapour of liquid at its boiling point is

(A) -100

(B) $+100$

(C) $+342$

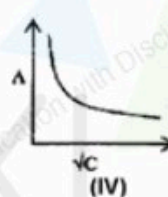
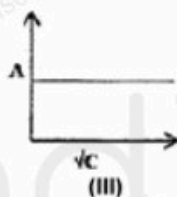
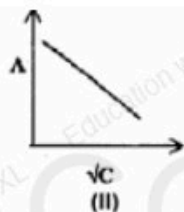
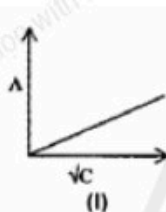
(D) -342

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

61. For a strong electrolyte, the change in the molar conductance with concentration is represented by



(A) I

(B) II

(C) III

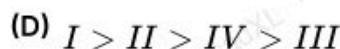
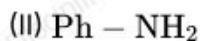
(D) IV

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

62. The order of basicity is



[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

63. The specific conductance of 0.01 M solution of the weak monobasic acid is $0.20 \times 10^{-3} \text{ S cm}^{-1}$. The dissociation constant of the acid is [Given: $\Lambda_{0HA} = 400 \text{ S cm}^2 \text{ mol}^{-1}$]

(A) 5×10^{-2}

(B) 2.5×10^{-5}

(C) 5×10^{-4}

(D) 2.5×10^{-11}

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

64. The set of quantum numbers that cannot be allotted to an electron in an atom is

(A) $n = 3, l = 2, m_1 = +2, m_2 = -1/2$

(B) $n = 2, l = 0, m_1 = +1, m_s = +1/2$

(C) $n = 1, l = 0, m_1 = 0, m_s = +1/2$

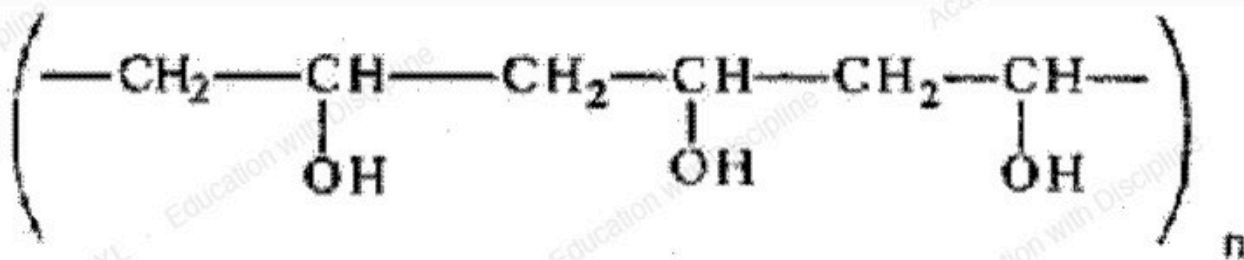
(D) $n = 4, l = 3, m_1 = 0, m_s = -1/2$

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

65. Polyvinyl alcohol is an important polymer. The structure is given below: It is prepared by polymerization of



- (A) $\text{CH}_2 = \text{CH} - \text{OH}$ (B) $\text{CH}_2 = \text{CH} - \text{OCOCH}_3$, followed by hydrolysis
(C) $\text{CH}_2 = \text{CH} - \text{CN}$, followed by hydrolysis (D) $\text{CH}_2 = \text{CH} - \text{COOCH}_3$, followed by hydrolysis

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

66. For SF_4 , the molecular geometry and hybridization of the central atom respectively are

- (A) Square planar, dsp^2 (B) Tetrahedral, sp^3
(C) Seesaw, sp^3d (D) Square pyramid, sp^3d

[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

67. If the energy of an electron in the 1st and 2nd energy levels of an H atom are -13.6 eV and -3.4 eV , respectively, the energy required in eV to excite an electron from the 1st to the 2nd energy level is

- (A) 17.0 (B) -17.0
(C) 10.2 (D) -10.2

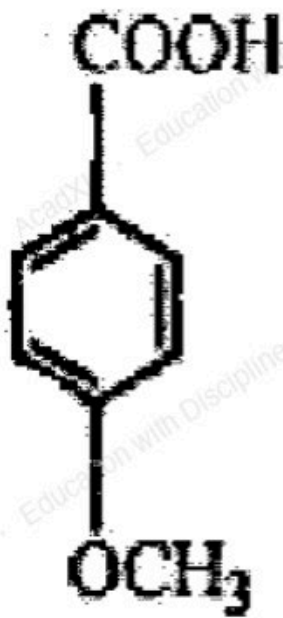
[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

68. The pKa values of the acids A to D are found to be 4.19, 3.41, 4.46 and 4.76. The acid having pKa of 3.41 is

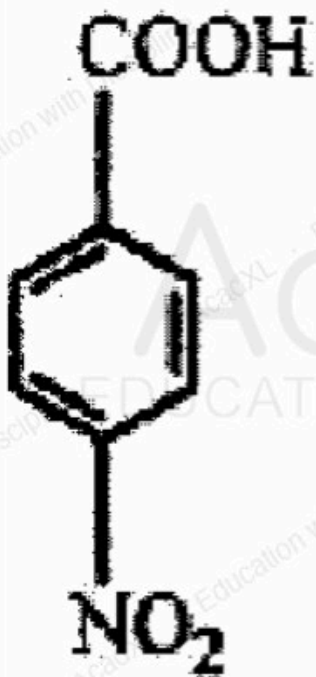
(A)



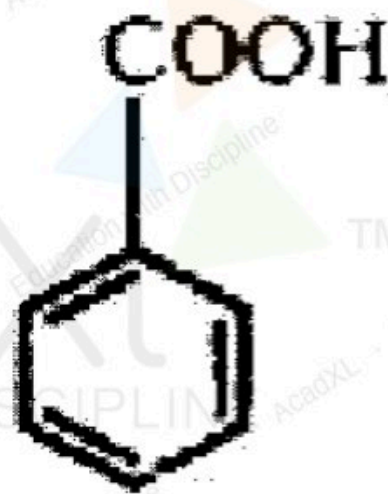
(B)



(C)



(D)

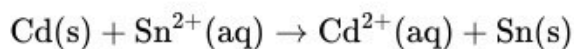


[3 marks, -1 for a wrong answer]

ANSWER: C

No solution stored for this question.

69. The reaction given below is the cell reaction in a galvanic cell.



Where, $[\text{Cd}^{2+}] = 0.1 \text{ M}$ and $[\text{Sn}^{2+}] = 0.025 \text{ M}$

Given: $E_{\text{Cd}^{2+}/\text{Cd}}^0 = -0.403 \text{ V}$, $E_{\text{Sn}^{2+}/\text{Sn}}^0 = -0.136 \text{ V}$, $F = 96485 \text{ C mol}^{-1}$

At 25°C , the free energy change for this reaction is

- (A) -48.05 kJ (B) -54.96 kJ
(C) -100.58 kJ (D) -107.46 kJ

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

70. Triethylamine is reacted with a peracid to obtain X. The nitrogen atom in X has formal charge

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

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

71. The species that cannot exist is

- (A) SiF_6^{2-} (B) BF_6^{3-}
(C) SF_6 (D) AlF_6^{3-}

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

72. The experimental observations for the following reaction are given below: $P + Q \rightarrow \text{Product}$. The order of this reaction is:

[P]/M	[Q]/M	Initial Rate/mol s ⁻¹
0.2	0.5	8×10^{-3}
0.4	0.5	3.2×10^{-2}
0.2	0.25	4×10^{-3}

- (A) Zero (B) One
(C) Two (D) Three

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

73. Absorbance of a chlorophyll solution measured at 660 nm at 25 °C using a 1 cm cell was found to be 0.4.

The same solution is heated up to 35 °C and absorbance is measured once again under the same condition.

The observed absorbance will be

- (A) 0.2 (B) 0.4
(C) 0.6 (D) 0.8

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

74. The species which is unable to show disproportionation reaction is

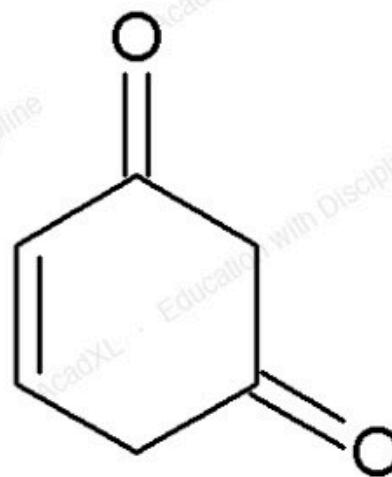
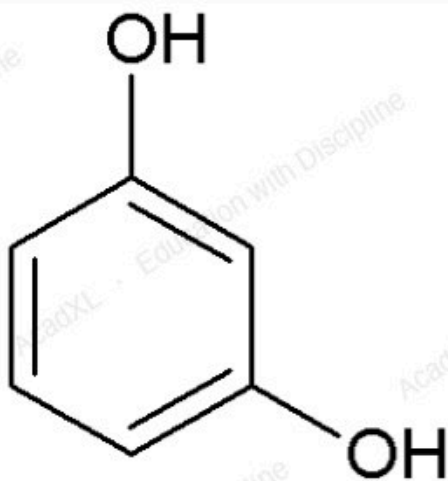
- (A) ClO_3^- (B) ClO_4^-
(C) ClO_2^- (D) ClO^-

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

75. At normal temperature, X and Y are



(A) resonance structures

(B) tautomers

(C) functional isomers

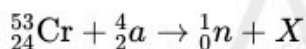
(D) positional isomers

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

76. The element X formed in the following nuclear reaction is



(A) ${}_{26}^{56}\text{Fe}$

(B) ${}_{25}^{55}\text{Mn}$

(C) ${}_{25}^{56}\text{Mn}$

(D) ${}_{25}^{55}\text{Fe}$

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

77. As part of a diagnostic procedure for a thyroid disorder, a patient is given certain amount of iodine-131. The half life of this radioactive iodine-131 is 8.0 days. The percent fraction of iodine-131 that will remain in the body after 32 days, if there is no elimination of iodine through the body is

(A) 6.25

(B) 0.0625

(C) 2.77

(D) 25

[3 marks, -1 for a wrong answer]

ANSWER: A

No solution stored for this question.

78. 1-Phenoxypropane is treated with excess of conc. HI at 0 °C and the mixture of products is treated with thionyl chloride. The products formed are

- (A) n-propanol + Chlorobenzene
(B) Phenol + n-propyl iodide
(C) n-propyl chloride + Chlorobenzene
(D) n-propyl chloride + Phenol

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

79. To a solution containing one mole $\text{MCl}_3 \cdot 4\text{NH}_3$, on addition of excess silver nitrate solution, it was found that two moles of AgCl are precipitated. This observation suggests that the secondary valence of M in this complex is

- (A) 3
(B) 5
(C) 6
(D) 2

[3 marks, -1 for a wrong answer]

ANSWER: B

No solution stored for this question.

80. (i) chlorobenzene is mono-nitrated to M
(ii) nitrobenzene is mono-chlorinated to N
(iii) anisole is mono-nitrated to P
(iv) 2-nitrochlorobenzene is mono-nitrated to Q

Out of M, N, P and Q the compound that undergoes reaction with aq. NaOH fastest is

- (A) M
(B) N
(C) P
(D) Q

[3 marks, -1 for a wrong answer]

ANSWER: D

No solution stored for this question.

Answer key

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

