

80 previous-year questions, questions only — solve them first. The official answer key is on the last page.

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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]

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

(A) FeCl_3 , SnCl_2

(B) HgCl_2 , SnCl_2

(C) FeCl_2 , SnCl_2

(D) FeCl_3 , KI

[3 marks, -1 for a wrong answer]

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]

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

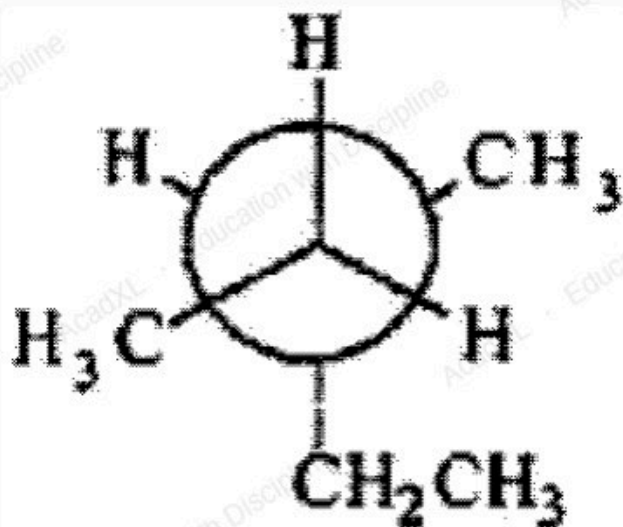
(C) α, α

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

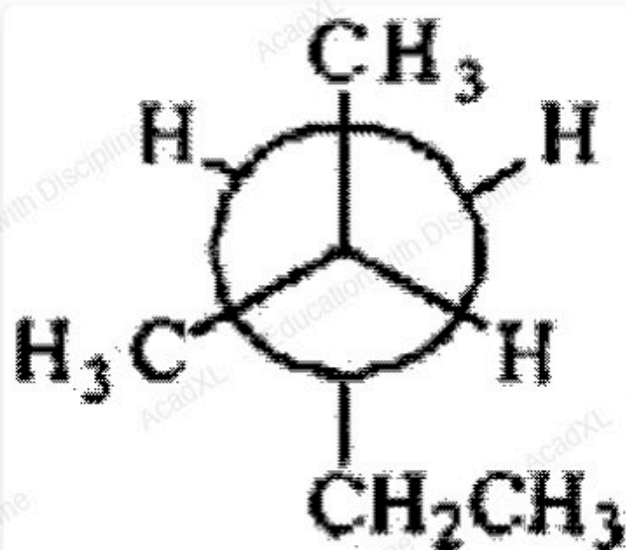
[3 marks, -1 for a wrong answer]

5. 2-methylpentane is

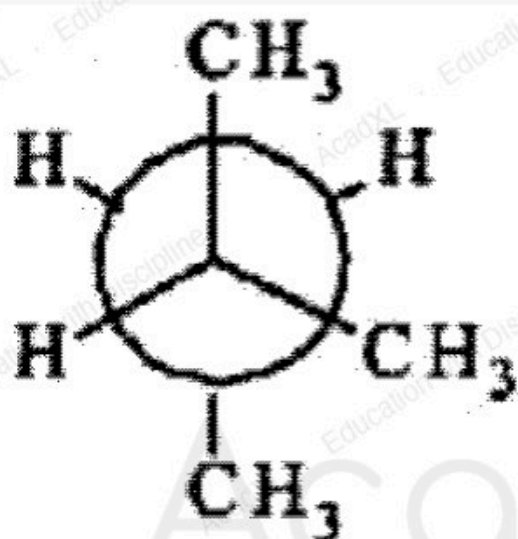
(A)



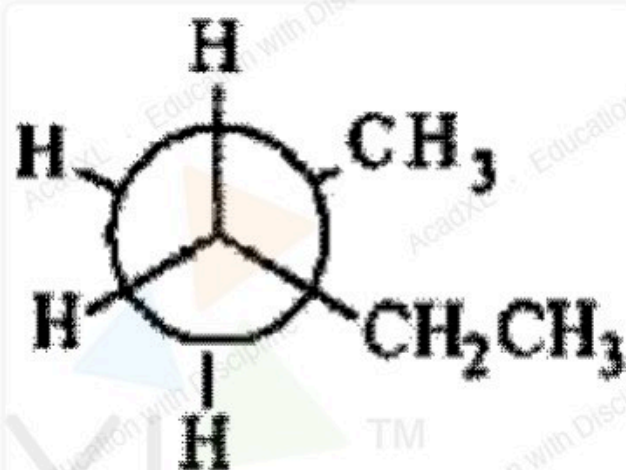
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

6. The molecule having the highest dipole moment is

(A) CO₂

(B) CH₄

(C) NH₃

(D) NF₃

[3 marks, -1 for a wrong answer]

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]

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

- (A) $\text{CH}_3\text{CONHCH}_2\text{CH}_3$ (B) $\text{CH}_3\text{CH}_2\text{CONHCH}_2\text{CH}_3$
(C) $(\text{CH}_3\text{COO}^-)(\text{CH}_3\text{CH}_2\text{NH}_3^+)$ (D) $(\text{CH}_3\text{CH}_2\text{COO}^-)(\text{CH}_3\text{NH}_3^+)$

[3 marks, -1 for a wrong answer]

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]

10. The species which has triangular planar geometry is

- (A) NF_3 (B) NO_3^-
(C) AlCl_3 (D) SbH_3

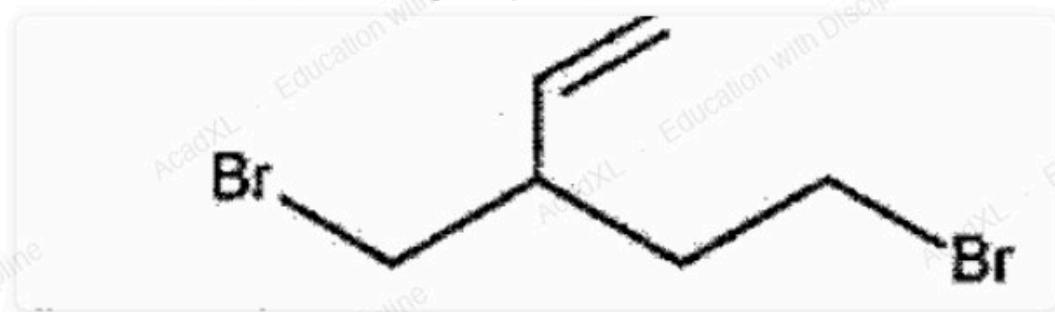
[3 marks, -1 for a wrong answer]

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

- (A) $\text{H}_2\text{S} < \text{H}_2\text{Se} < \text{H}_2\text{Te}$ (B) $\text{H}_2\text{Se} < \text{H}_2\text{S} < \text{H}_2\text{Te}$
(C) $\text{H}_2\text{Te} < \text{H}_2\text{S} < \text{H}_2\text{Se}$ (D) $\text{H}_2\text{Se} < \text{H}_2\text{Te} < \text{H}_2\text{S}$

[3 marks, -1 for a wrong answer]

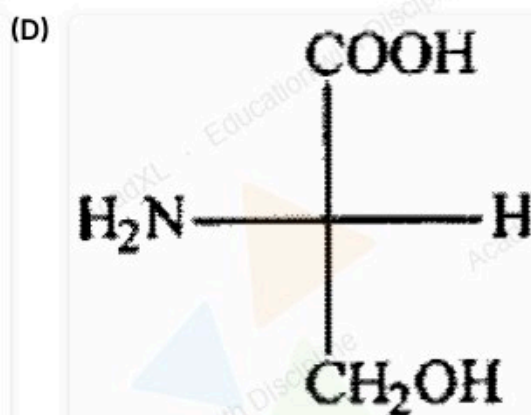
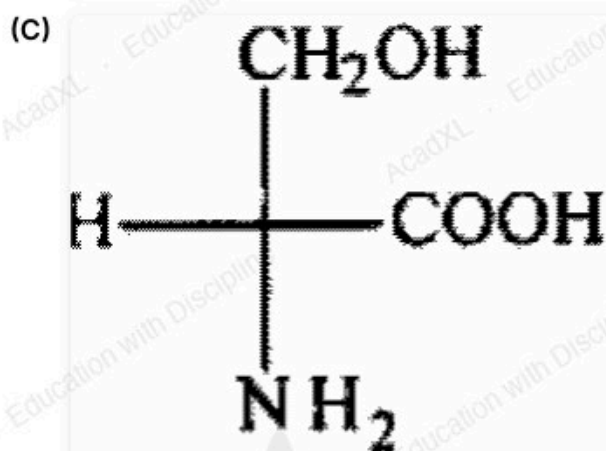
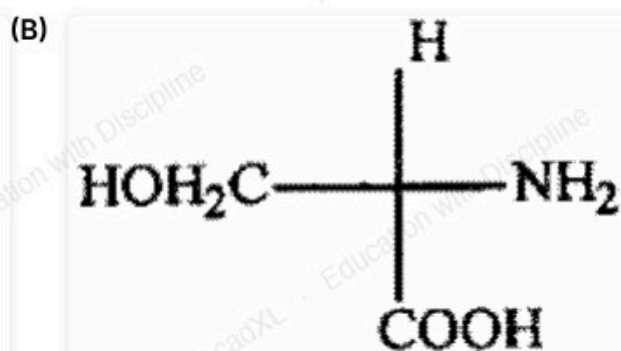
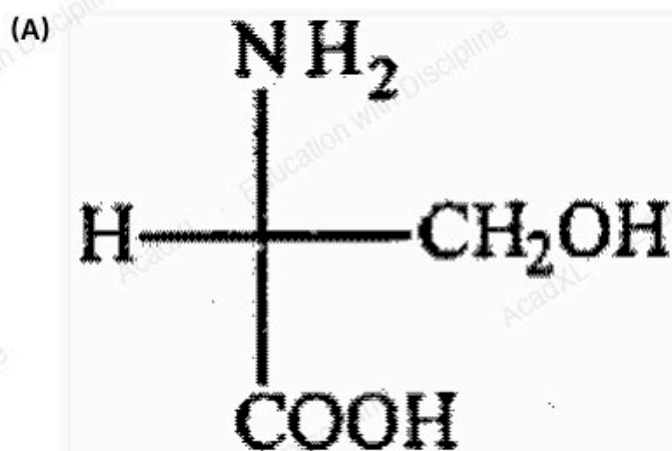
12. The IUPAC name of the following compound is



- (A) 5-bromo-3-(bromomethyl) pent-1-ene (B) 3-(1-bromomethyl)-4-bromobut-1-ene
(C) 1,4-dibromo-3-ethenylbutane (D) 1-bromo-3-(bromomethyl) but-4-ene

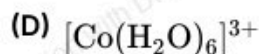
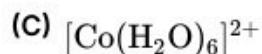
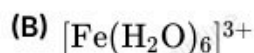
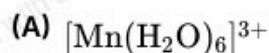
[3 marks, -1 for a wrong answer]

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]

14. The complex having zero crystal field stabilization energy is



[3 marks, -1 for a wrong answer]

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



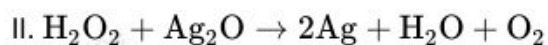
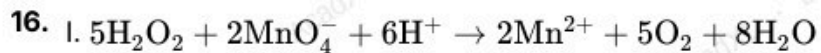
(A) 0.0625

(B) 169

(C) 13

(D) 1.40×10^{-4}

[3 marks, -1 for a wrong answer]



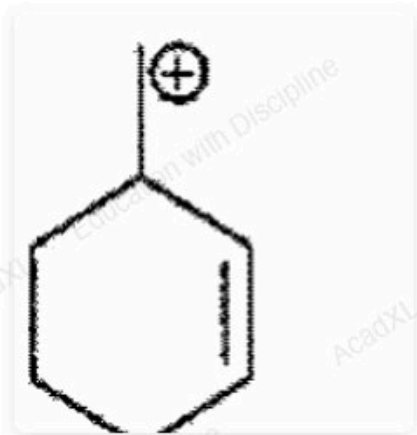
The role of hydrogen peroxide in the above reaction is

- (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

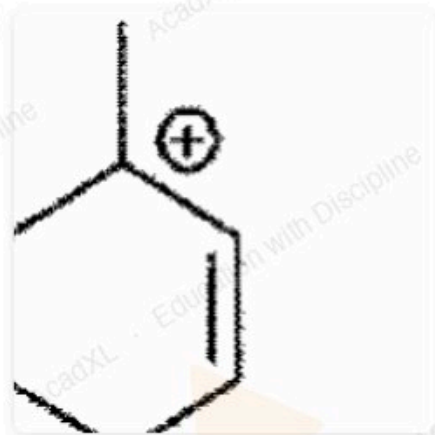
[3 marks, -1 for a wrong answer]

17. The most stable carbocation is

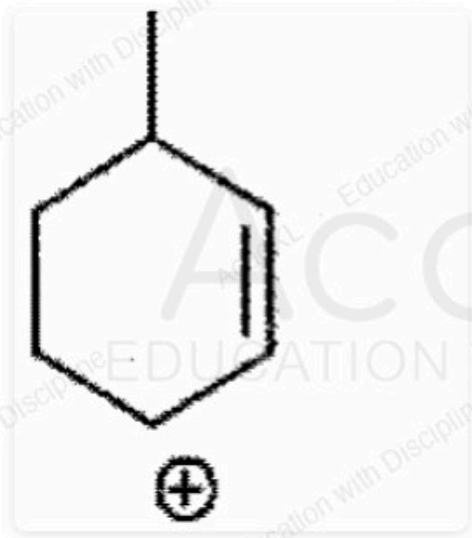
(A)



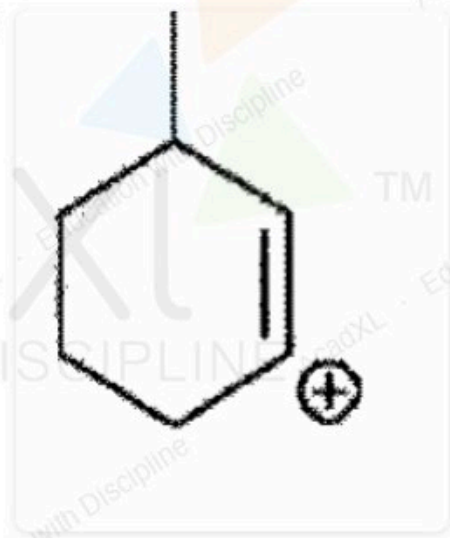
(B)



(C)



(D)



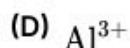
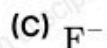
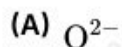
[3 marks, -1 for a wrong answer]

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.

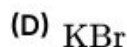
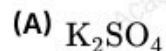
[3 marks, -1 for a wrong answer]

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



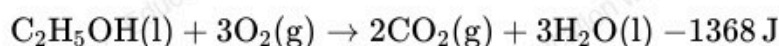
[3 marks, -1 for a wrong answer]

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

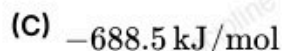
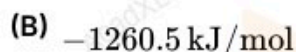
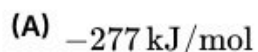


[3 marks, -1 for a wrong answer]

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

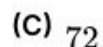
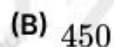
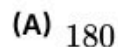


$$\Delta H_f CO_2(g) = 393.5 \text{ kJ/mol}; \Delta H_f H_2O(l) = -286 \text{ kJ/mol}$$



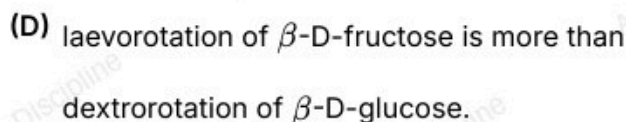
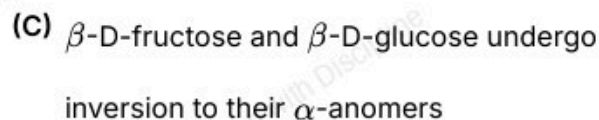
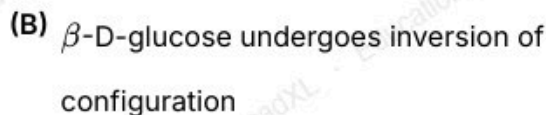
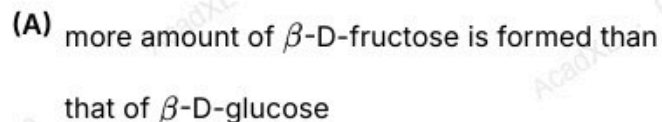
[3 marks, -1 for a wrong answer]

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]

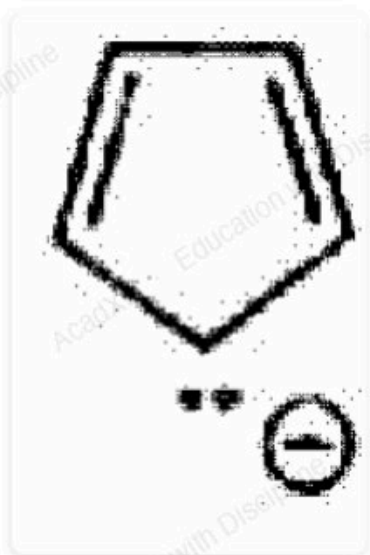
23. 50 g of sucrose is hydrolysed to a mixture of glucose and fructose. Sucrose is dextrorotatory, however the mixture formed is laevorotatory. This is because



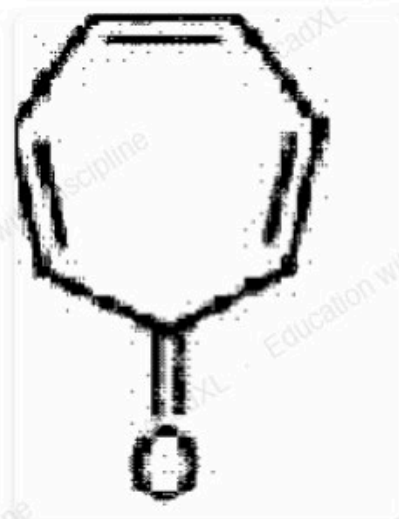
[3 marks, -1 for a wrong answer]

24. Among the following compound that is not aromatic is

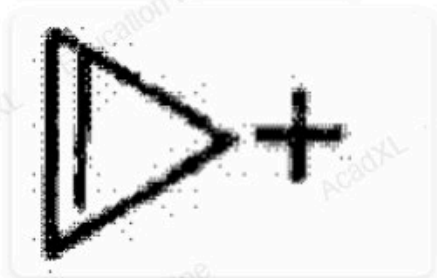
(A)



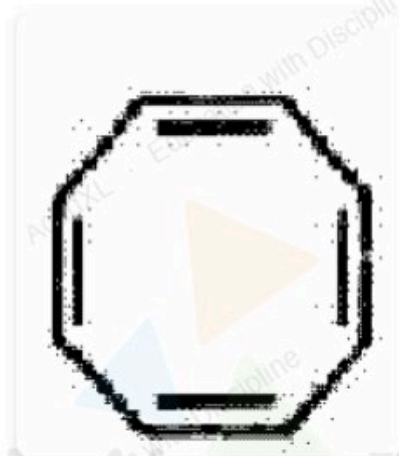
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

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

(A) 4.9 BM

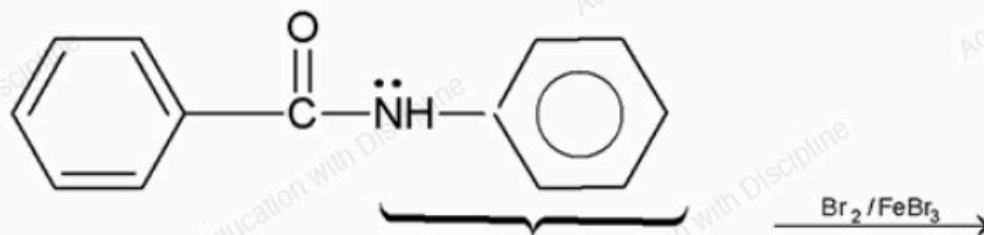
(B) 2.45 BM

(C) 2.83 BM

(D) 1.73 BM

[3 marks, -1 for a wrong answer]

26. The major product of the following reaction is



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

[3 marks, -1 for a wrong answer]

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]

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]

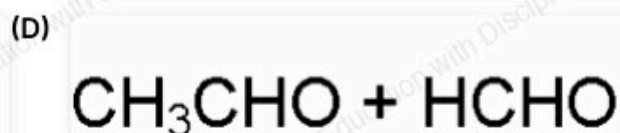
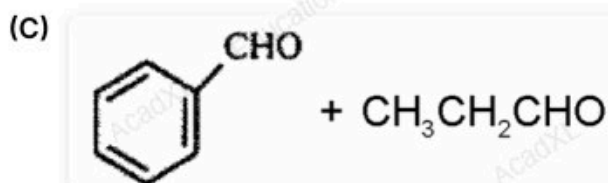
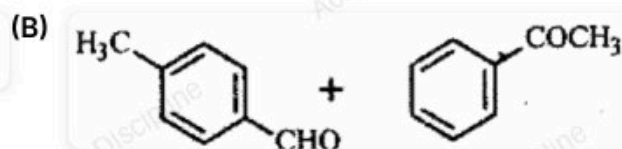
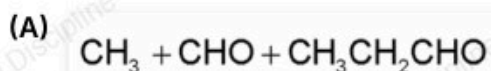
29. From the following the species that are isoelectronic are

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

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

[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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]

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]

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) $1/K_b$

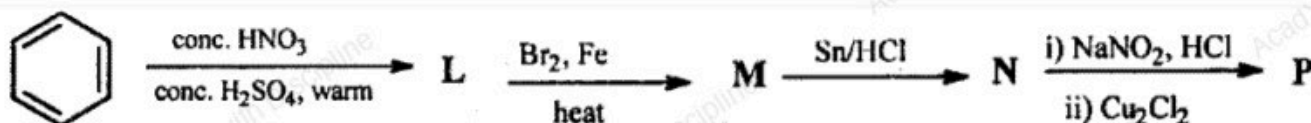
(B) K_w/K_b

(C) K_b/K_w

(D) $K_w K_b$

[3 marks, -1 for a wrong answer]

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]

35. Real gases behave ideally at

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

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

[3 marks, -1 for a wrong answer]

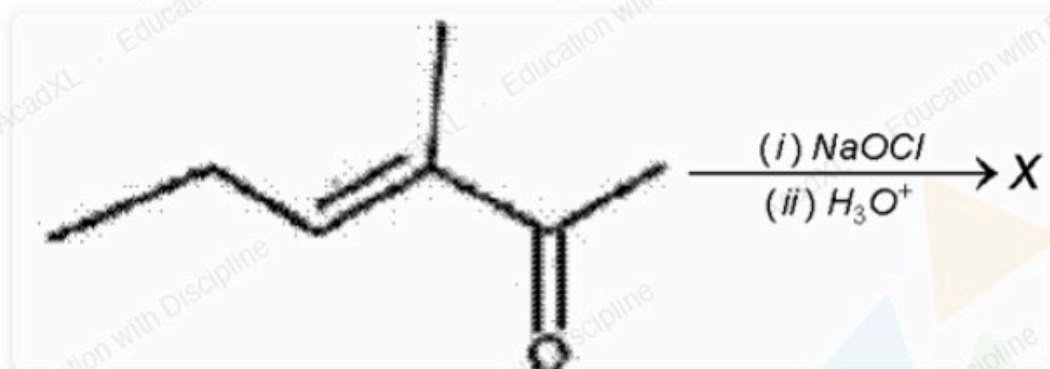
36. In the cyanide extraction process of silver from Argentite ore, the oxidizing and the reducing agents used are respectively

- (A) O_2 and CO
(C) HNO_3 and Zn dust

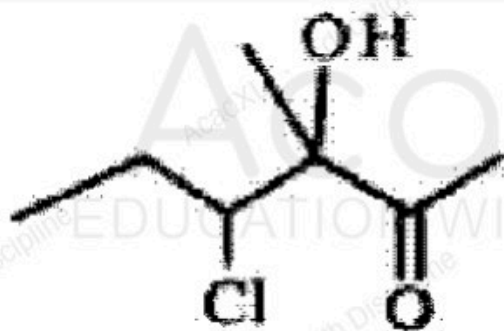
- (B) O_2 and Zn dust
(D) HNO_3 and CO

[3 marks, -1 for a wrong answer]

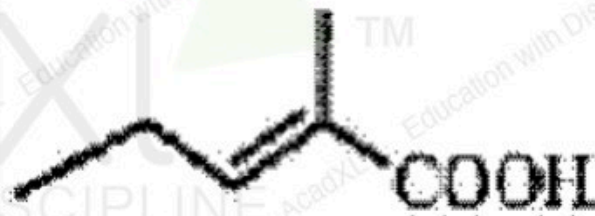
37. The main product X formed in the following reactions is



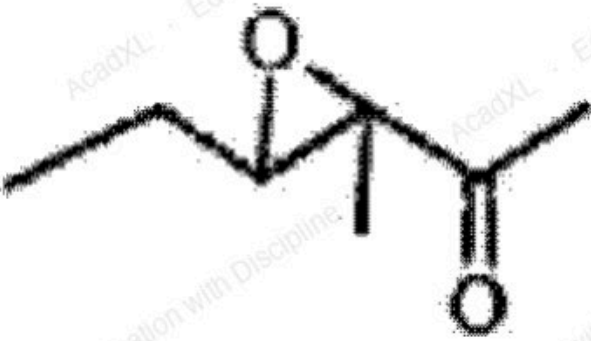
(A)



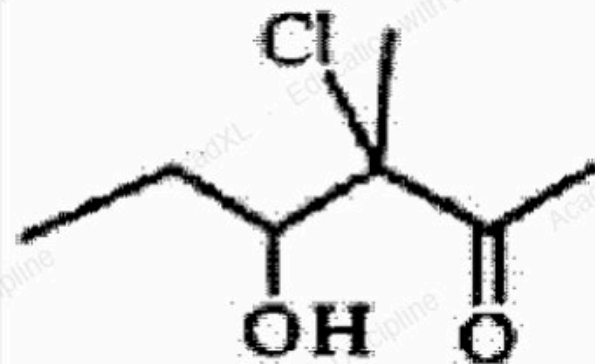
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

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)

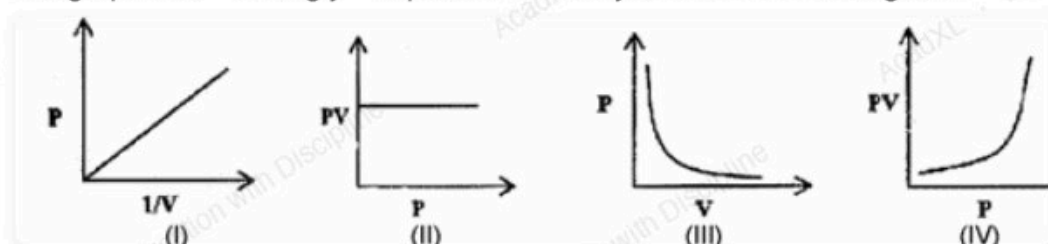
(B) (II) and (III)

(C) (III) and (IV)

(D) (II) and (IV)

[3 marks, -1 for a wrong answer]

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



(A) II

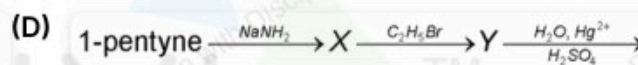
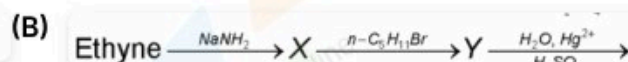
(B) I

(C) IV

(D) III

[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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]

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]

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]

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]

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 $Al = 27$]

(A) 48

(B) 72

(C) 144

(D) 24

[3 marks, -1 for a wrong answer]

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]

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]

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]

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

(A) sp^2

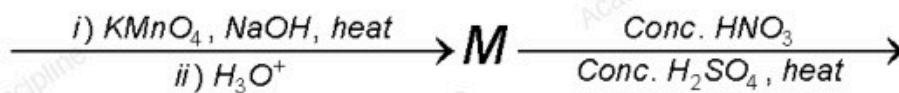
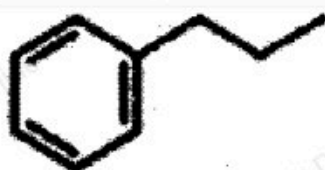
(B) sp^3

(C) sp

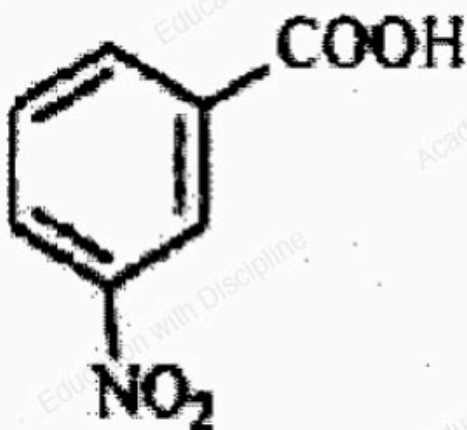
(D) sp^3d

[3 marks, -1 for a wrong answer]

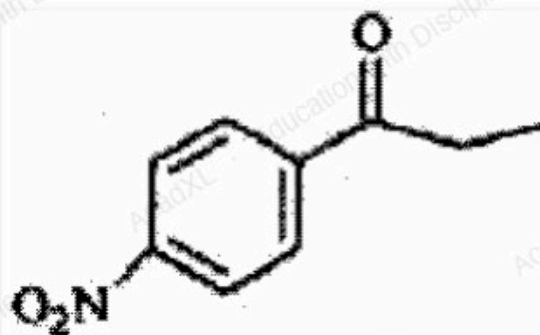
50. The product 'N' of the following reaction is



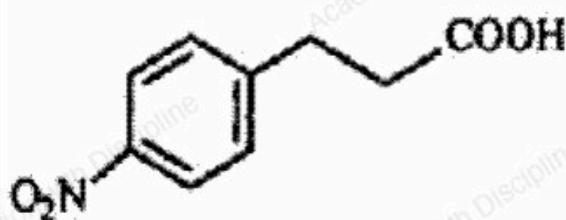
(A)



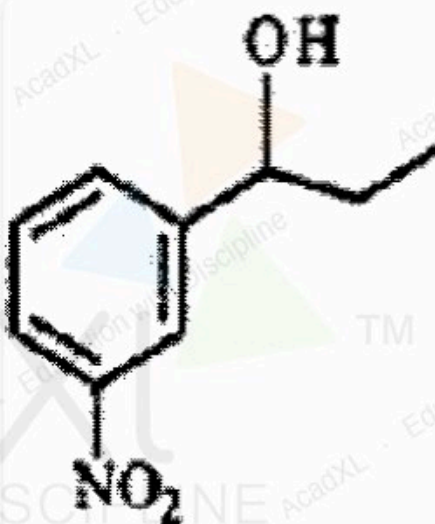
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

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]

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

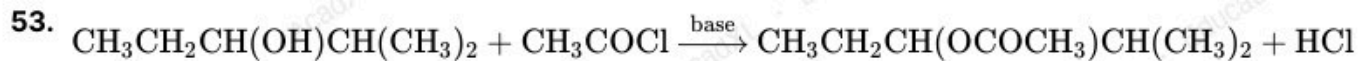
(A) Cl_2O

(B) Cl_2O_7

(C) ClO_2

(D) Cl_2O_6

[3 marks, -1 for a wrong answer]

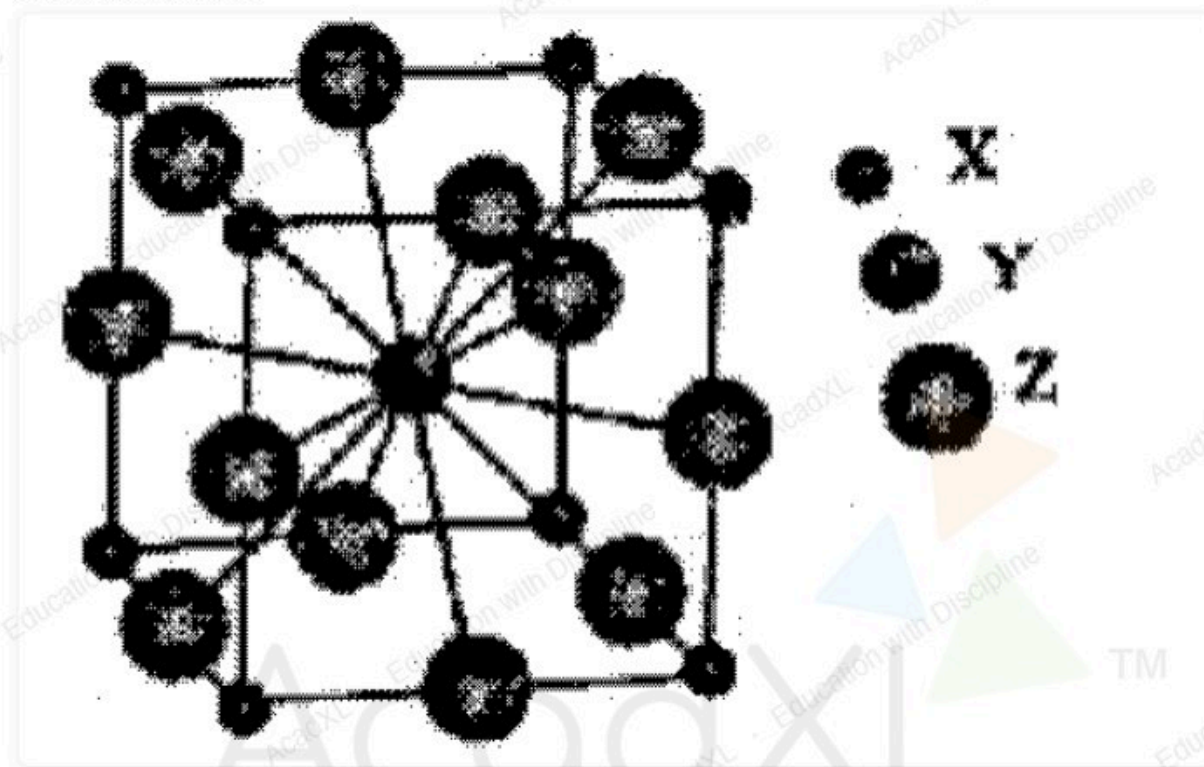


In the above reaction, if the reactant alcohol is pure R-isomers, the product would

- (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]

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 :



- (A) X_2YZ_3 (B) XY_3Z
(C) XYZ_3 (D) X_3YZ_2

[3 marks, -1 for a wrong answer]

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]

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

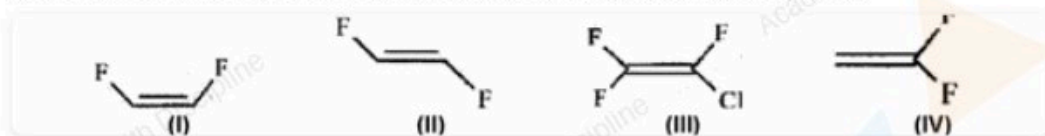
57. Which of the following hydrogen halides react with AgNO_3 to give a precipitate that dissolves in hypo solution?

(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]

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]

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

- (A) $\text{CH}_2 = \text{CH} - \text{Br}$ (B) $\text{CH}_3\text{CH}_2\text{Br}$
(C) $(\text{CH}_3)_2\text{CH} - \text{Br}$ (D) $\text{CH}_3\text{COCH}_2\text{CH}_2\text{Br}$

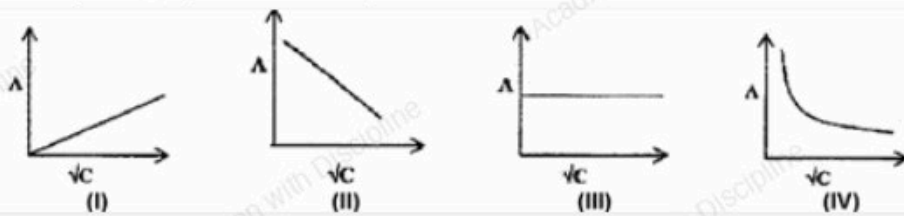
[3 marks, -1 for a wrong answer]

60. The enthalpy of vaporization of benzene is +35.3 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]

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]

62. The order of basicity is

- (I) $\text{Ph} - \text{CONH}_2$
(II) $\text{Ph} - \text{NH}_2$
(III) $\text{Ph} - \text{CH}_2 - \text{NH}_2$
(IV) $p\text{-OCH}_3\text{Ph} - \text{NH}_2$

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

[3 marks, -1 for a wrong answer]

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}

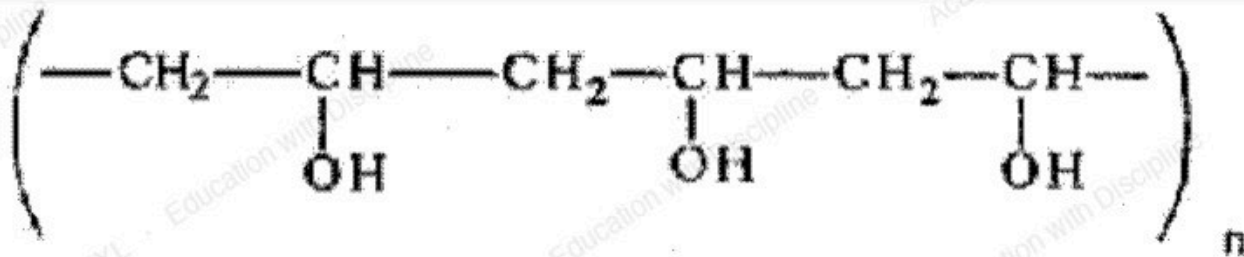
[3 marks, -1 for a wrong answer]

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]

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]

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]

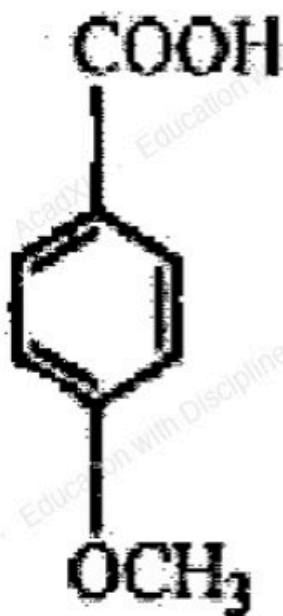
67. If the energy of an electron in the 1st and 2nd energy levels of an H atom are -13.6 eV and -3.4 eV , respectively, the energy required in eV to excite an electron from the 1st to the 2nd energy level is

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

[3 marks, -1 for a wrong answer]

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

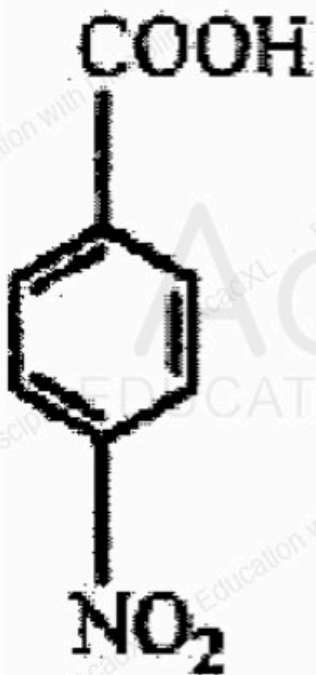
(A)



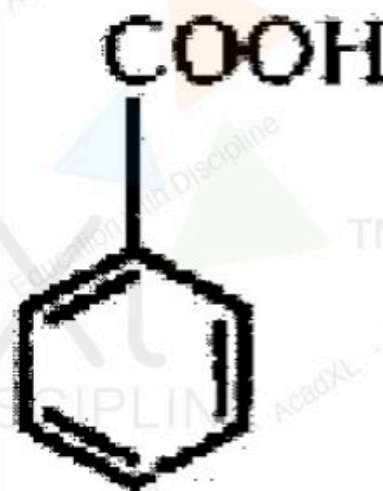
(B)



(C)

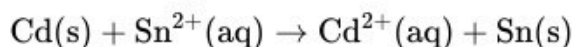


(D)



[3 marks, -1 for a wrong answer]

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]

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]

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]

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

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

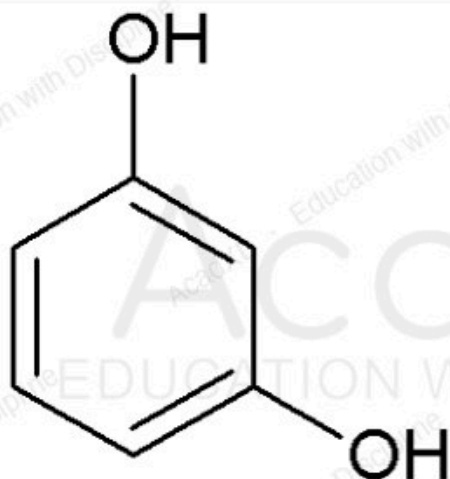
[3 marks, -1 for a wrong answer]

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

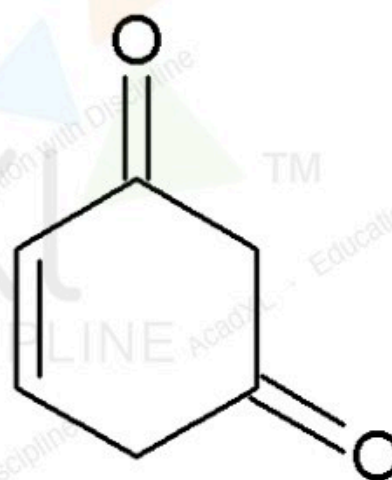
- (A) ClO_3^- (B) ClO_4^-
(C) ClO_2^- (D) ClO^-

[3 marks, -1 for a wrong answer]

75. At normal temperature, X and Y are



X

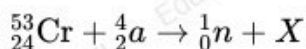


Y

- (A) resonance structures (B) tautomers
(C) functional isomers (D) positional isomers

[3 marks, -1 for a wrong answer]

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]

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]

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]

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]

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 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				

