

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

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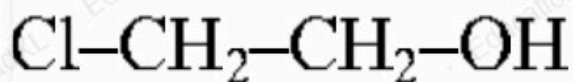
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NSEC 2009

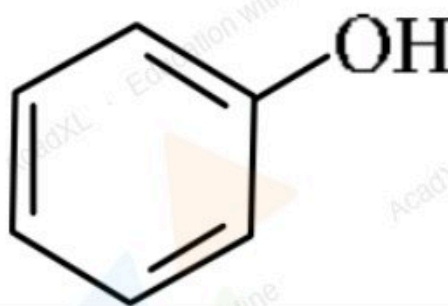
Time: 120 minutes · Maximum marks: 240 · Questions: 80

1. The most acidic among the following compounds is

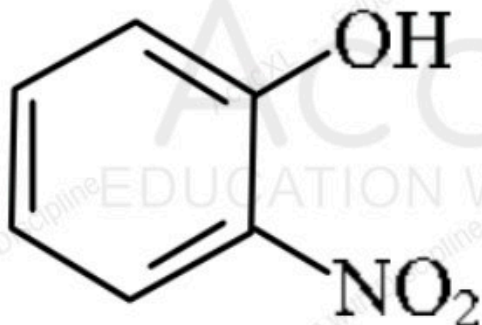
(A)



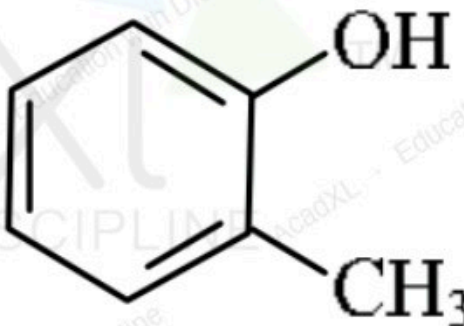
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

2. The number of ether metamers represented by the molecular formula $\text{C}_4\text{H}_{10}\text{O}$ is

(A) 1

(B) 2

(C) 3

(D) 4

[3 marks, -1 for a wrong answer]

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

(A) amide

(B) primary amine

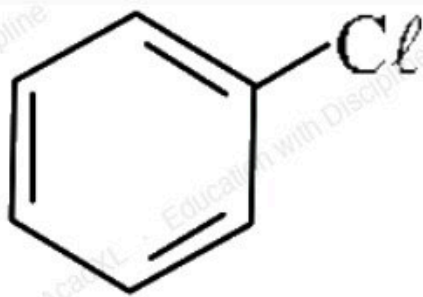
(C) secondary amine

(D) alcohol

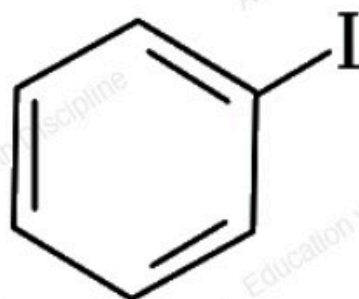
[3 marks, -1 for a wrong answer]

4. The compound X in the reaction, $\text{C}_6\text{H}_6 + \text{ICl} \xrightarrow{\text{anhydrous AlCl}_3} \text{X}$ is

(A)



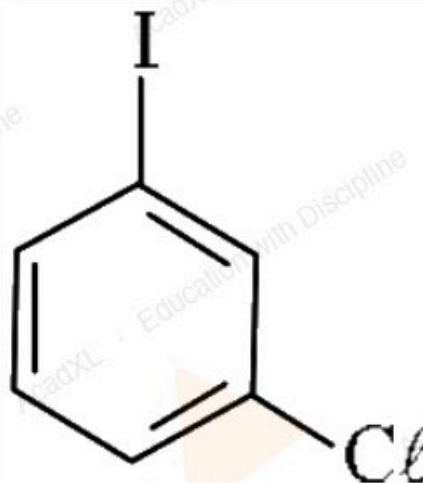
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

5. S_N reactivity of the following halides. (i) $(\text{CH}_3)_3\text{CBr}$ (ii) $(\text{C}_6\text{H}_5)_2\text{CHBr}$ (iii) $(\text{C}_6\text{H}_5)_2\text{C}(\text{CH}_3)\text{Br}$ (iv) $(\text{CH}_3)_2\text{CHBr}$ 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]

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

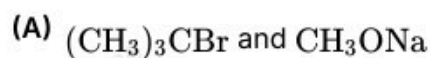
(B) aldehyde < alcohol < carboxylic acid

(C) alcohol < aldehyde < carboxylic acid

(D) carboxylic acid < aldehyde < alcohol

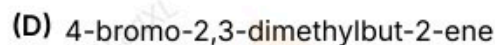
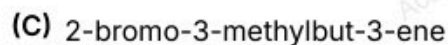
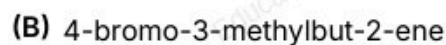
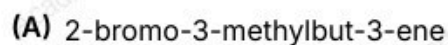
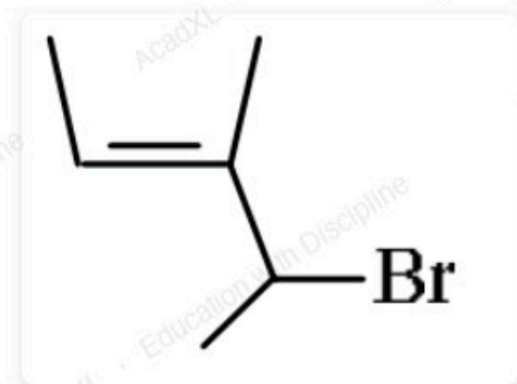
[3 marks, -1 for a wrong answer]

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



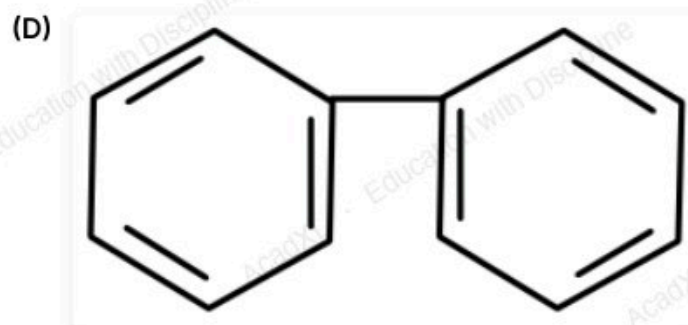
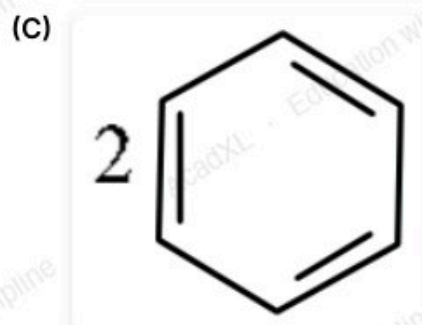
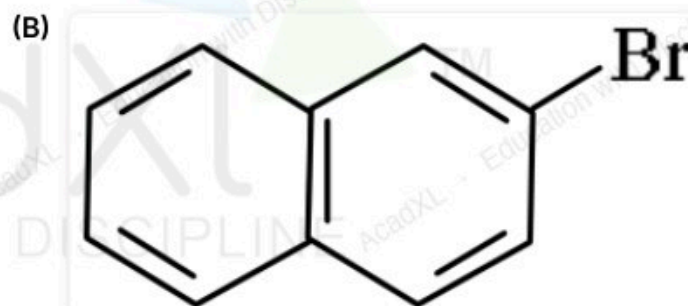
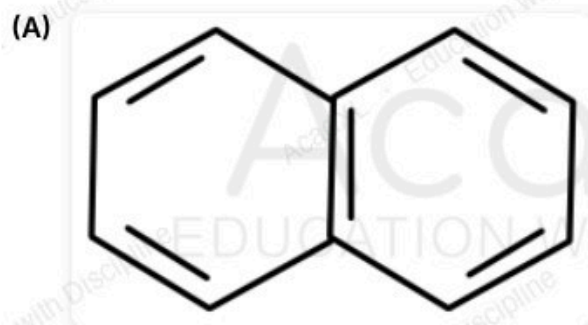
[3 marks, -1 for a wrong answer]

8. The IUPAC name of the following compound is



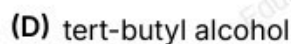
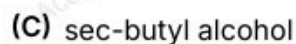
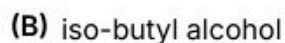
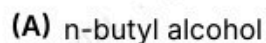
[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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]

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]

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]

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

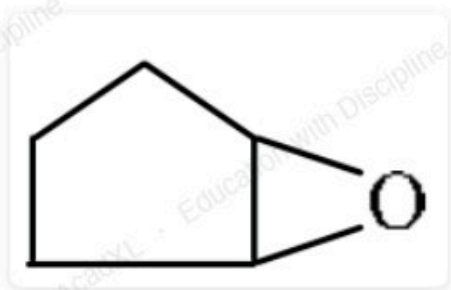
(C) ammoniacal silver nitrate

(D) sodium metal suspended in hexane

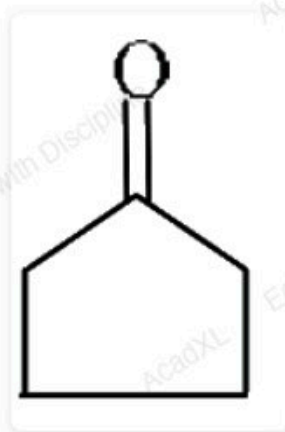
[3 marks, -1 for a wrong answer]

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

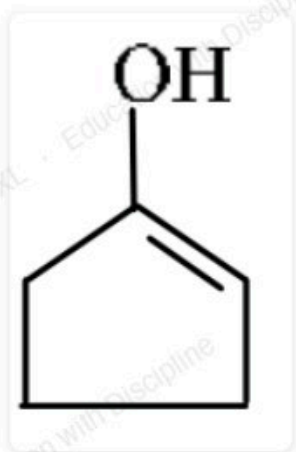
(A)



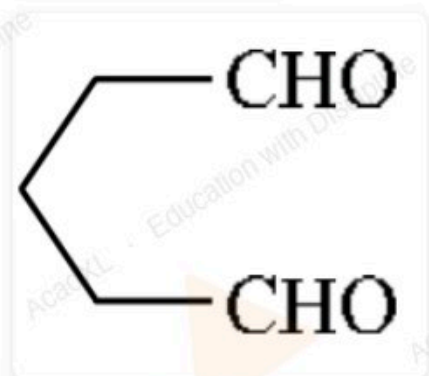
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

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

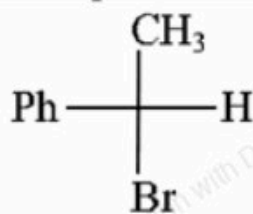
(B) 1-chloro-1-butene

(C) 1-chloro-2-butene

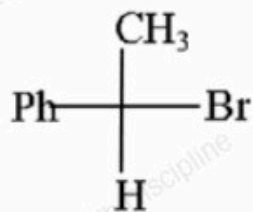
(D) 2-chloro-1-butene

[3 marks, -1 for a wrong answer]

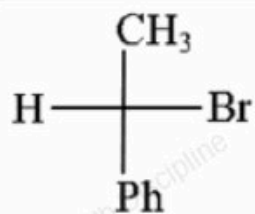
17. The pair of enantiomers among the following compounds is



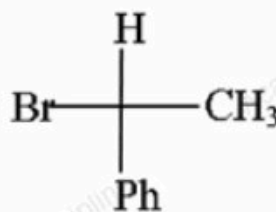
I



III



II



IV

(A) I and IV

(B) II and IV

(C) II and III

(D) I and II

[3 marks, -1 for a wrong answer]

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

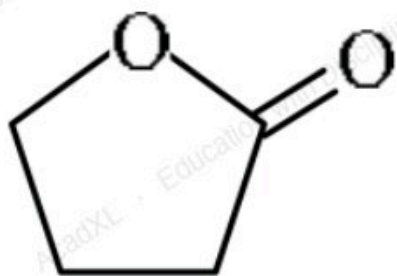
(C) 3-methyl-2-buten-1-ol

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

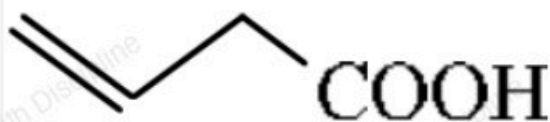
[3 marks, -1 for a wrong answer]

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

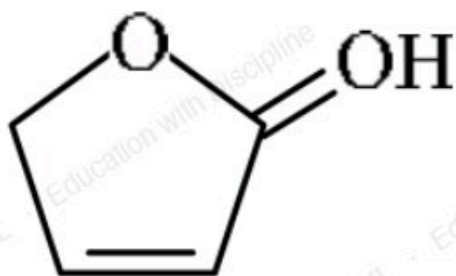
(A)



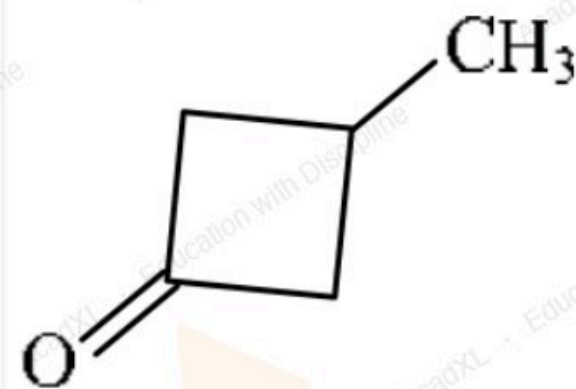
(B)



(C)



(D)

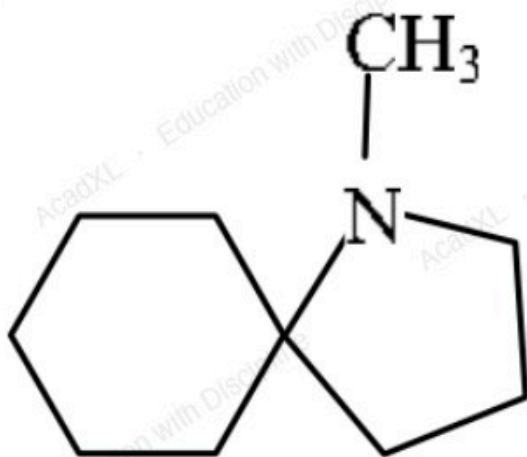


[3 marks, -1 for a wrong answer]

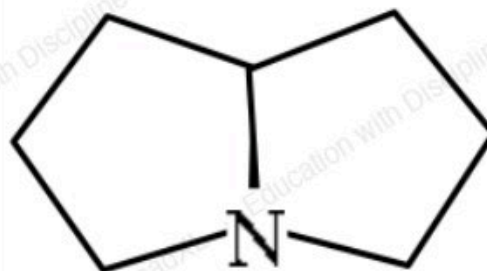
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20. The nitrogen atom in the cyclic compounds can be removed as trimethylamine by successive Hoffmann eliminations (involving exhaustive methylation followed by heating with AgOH). The amine which will require a greater number of Hoffmann eliminations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

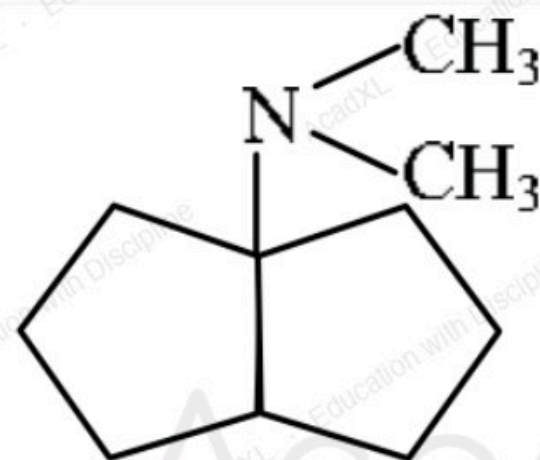
(A)



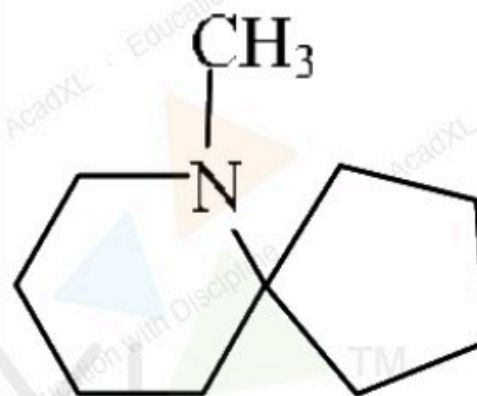
(B)



(C)

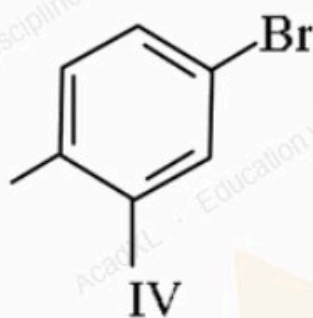
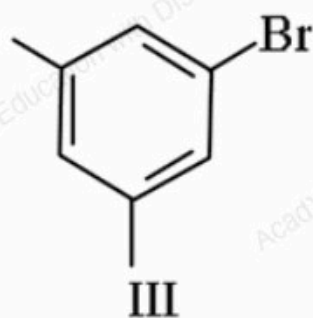
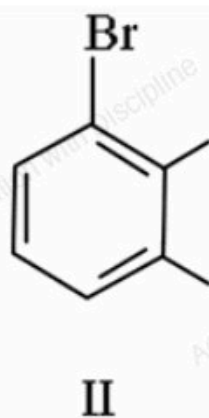
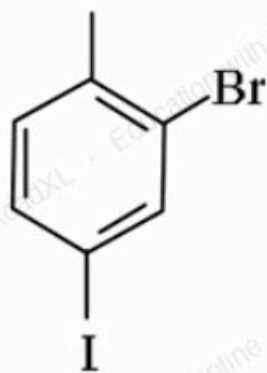


(D)



[3 marks, -1 for a wrong answer]

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

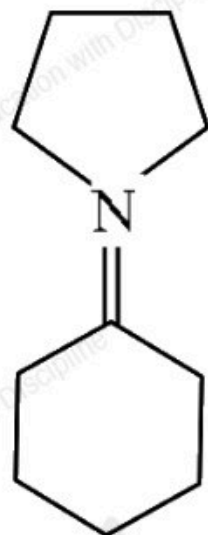
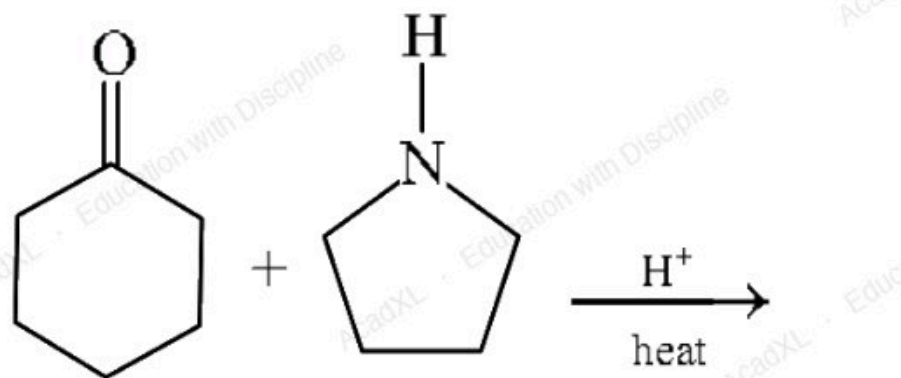
(B) III and IV

(C) I and IV

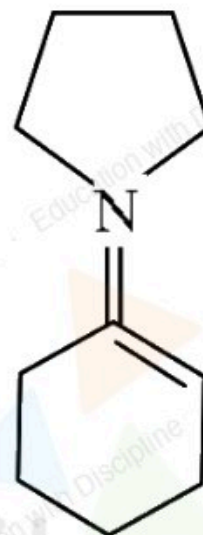
(D) II and III

[3 marks, -1 for a wrong answer]

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



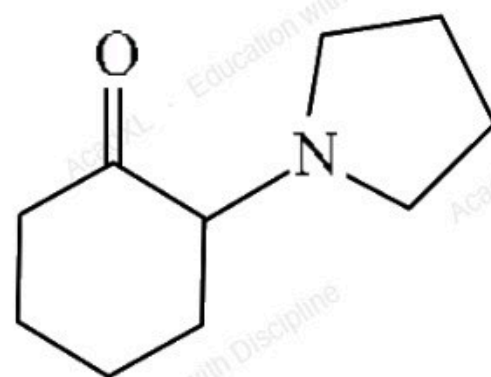
I



II



III



IV

(A) I

(B) II

(C) III

(D) IV

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]

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]

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]

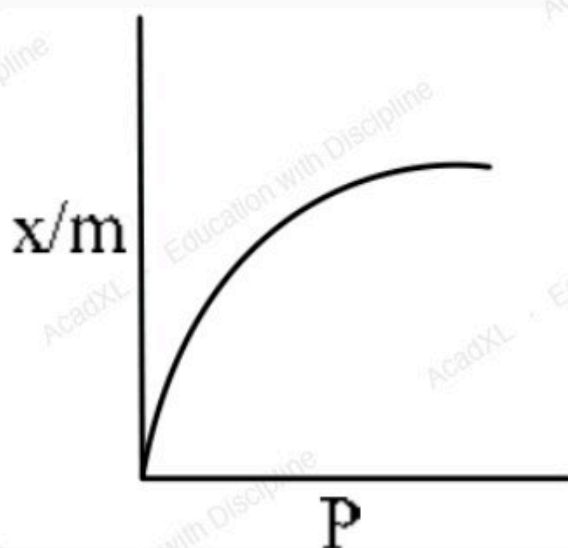
26. For a chemical reaction, $A + B \rightarrow C + D$, the following data was recorded: Set 1: initial $[A] = 4.00$, $[B] = 3.00$, rate = 0.10 ; Set 2: $[A] = 12.00$, $[B] = 3.00$, rate = 0.90 ; Set 3: $[A] = 12.00$, $[B] = 6.00$, rate = 0.90 (concentrations in mol dm^{-3} , rate in $\text{mol dm}^{-3}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

(A) rate = $k[A][B]$ (B) rate = $k[A]^2[B]^2$ (C) rate = $k[A]^2$ (D) rate = $k[A][B]^2$

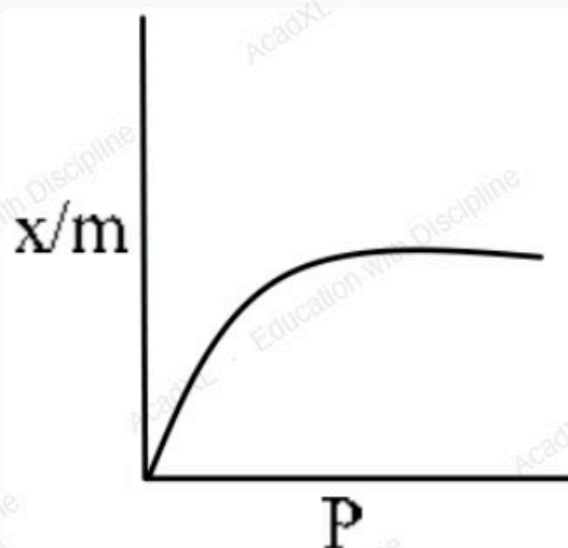
[3 marks, -1 for a wrong answer]

27. The plot representing langmuir's adsorption isotherm is

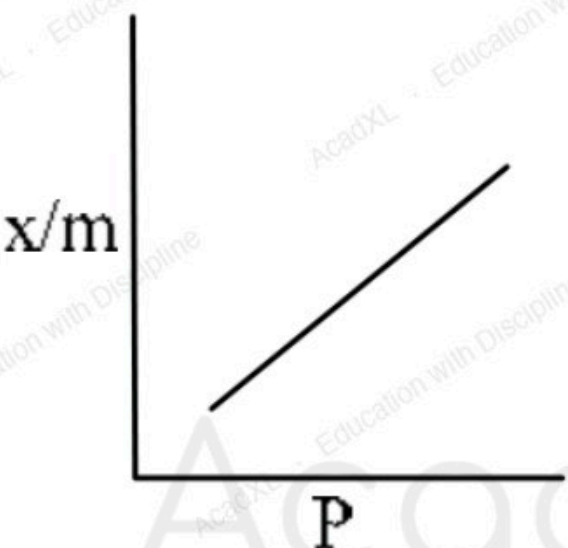
(A)



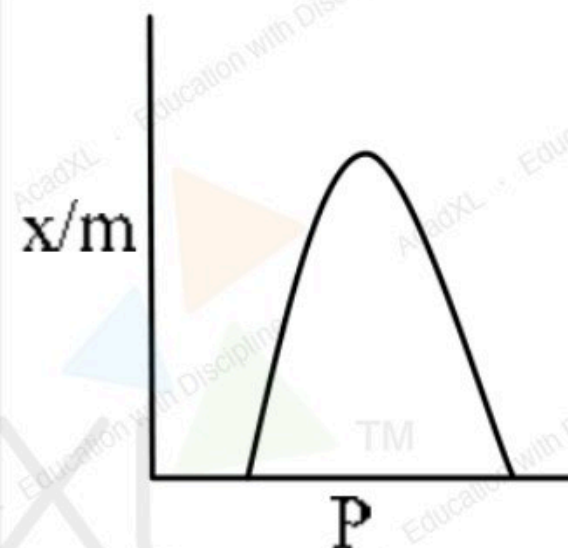
(B)



(C)



(D)



[3 marks, -1 for a wrong answer]

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]

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]

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]

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]

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]

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]

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]

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]

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]

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]

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

$\text{CO}_2 + 2\text{H}_2\text{O} \rightleftharpoons \text{H}_3\text{O}^{3+} + \text{HC}_3^{1-}$. 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]

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]

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

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

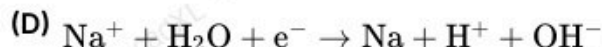
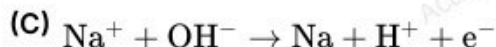
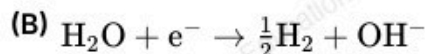
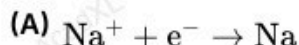
(B) $\Delta H = \Delta E + P\Delta V$

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

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

[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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]

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]

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]

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]

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}

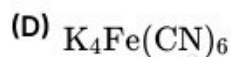
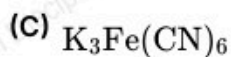
[3 marks, -1 for a wrong answer]

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

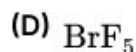
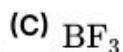
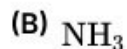
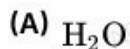
[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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]

51. The molecular geometry for ammonia is

(A) saw horse

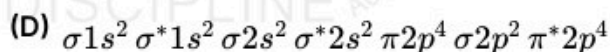
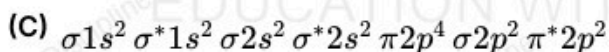
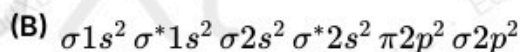
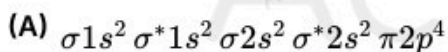
(B) trigonal planar

(C) tetrahedral

(D) pyramidal

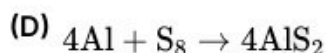
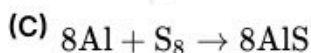
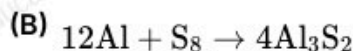
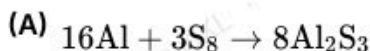
[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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

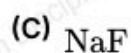
(B) K

(C) N

(D) M

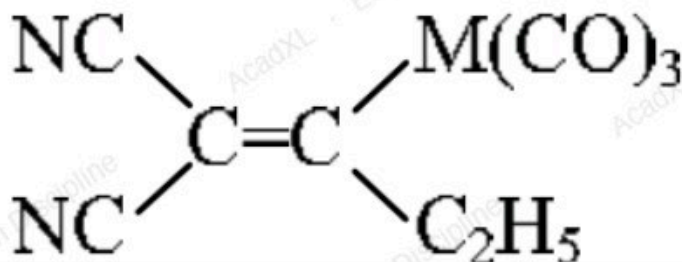
[3 marks, -1 for a wrong answer]

55. The strongest Bronsted base among the following compounds is



[3 marks, -1 for a wrong answer]

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



(A) 19, 11

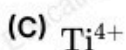
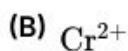
(B) 19, 05

(C) 13, 11

(D) 07, 06

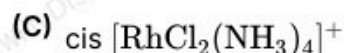
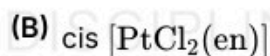
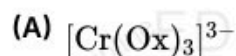
[3 marks, -1 for a wrong answer]

57. The aqua ion which will be almost colorless is



[3 marks, -1 for a wrong answer]

58. Among the following, the chiral complex is



[3 marks, -1 for a wrong answer]

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

(A) d-d transition

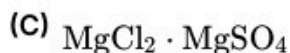
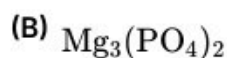
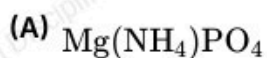
(B) charge transfer when Mn gives electron to oxygen

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

(D) absorption of IR frequencies

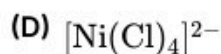
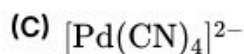
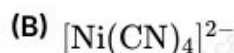
[3 marks, -1 for a wrong answer]

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]

61. The species having tetrahedral shape is



[3 marks, -1 for a wrong answer]

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]

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

(A) Sheet silicates

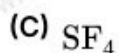
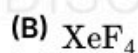
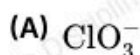
(B) Pyrosilicates

(C) Linear Chain silicates

(D) Three dimensional silicates

[3 marks, -1 for a wrong answer]

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



[3 marks, -1 for a wrong answer]

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]

66. Protein synthesis does not involve

(A) amino acids

(B) t RNA

(C) m RNA

(D) DNA

[3 marks, -1 for a wrong answer]

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]

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]

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]

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]

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]

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

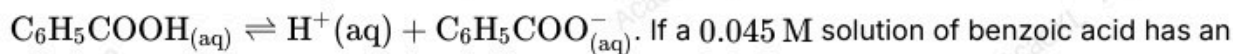
[3 marks, -1 for a wrong answer]

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]

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



$[\text{H}^+] = 1.7 \times 10^{-3}$, 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]

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

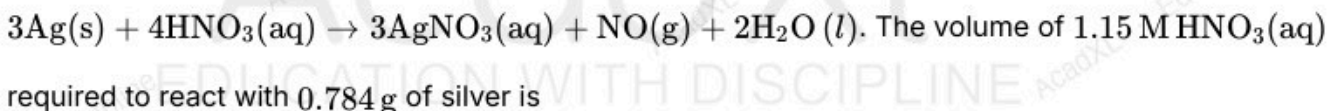
[3 marks, -1 for a wrong answer]

76. The oxidation-reduction reaction among the following is

- (A) $\text{H}_2\text{SO}_4 + 2\text{NH}_3 \rightarrow (\text{NH}_4)_2\text{SO}_4$ (B) $\text{H}_2\text{SO}_4 + \text{Na}_2\text{CO}_3 \rightarrow \text{Na}_2\text{SO}_4 + \text{H}_2\text{O} + \text{CO}_2$
(C) $2\text{K}_2\text{Cr}_2\text{O}_7 + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{Cr}_2\text{O}_7 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$ (D) $\text{H}_2\text{SO}_4 + \text{Cu} \rightarrow \text{CuSO}_4 + 2\text{H}_2\text{O} + \text{SO}_2$

[3 marks, -1 for a wrong answer]

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



- (A) 4.74 mL (B) 6.32 mL
(C) 8.43 mL (D) 25.3 mL

[3 marks, -1 for a wrong answer]

78. $\text{P}_4(\text{s}) + 3\text{OH}^-_{(\text{aq})} + 3\text{H}_2\text{O}(\text{l}) \rightarrow \text{PH}_3(\text{g}) + 3\text{H}_2\text{PO}_2^-_{(\text{aq})}$. 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]

79. $10\text{Cl}^-(\text{aq}) + 2\text{MnO}_4^-(\text{aq}) + 16\text{H}^+(\text{aq}) \rightarrow 5\text{Cl}_2(\text{g}) + 2\text{Mn}^{2+}(\text{aq}) + 8\text{H}_2\text{O}(\text{l})$. 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]

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]

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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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