kd education academy (9582701166)

Time : 5 Hour | STD 11 Science chemistry | Total Marks : 600

kd 700+ neet target ch-8 organic chemistry puricication and characterization part-3

*** Chemistry** **[600]**

1. On heating, some solid substances change from solid to vapour state without passing through liquid state. The technique used for the purification of such solid substances based on the above principle is known as

   (A) Sublimation (B) Distillation (C) Chromatography (D) Crystallization

2. In Lassaigne's extract of an organic compound, both nitrogen and sulphur are present, which gives blood red colour with Fe^{3+} due to the formation of-

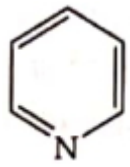
   (A) $[Fe(SCN)]^{2+}$ (B) $Fe_4[Fe(CN_6)]_3 xH_2O$

   (C) $NaSCN$

   (D) $[Fe(CN)_5NOS]^{4-}$

3. The Kjeldahl's method for the estimation of nitrogen can be used to estimate the amount of nitrogen in which one of the following compounds?

(A)



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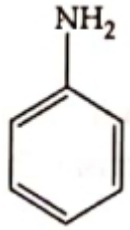

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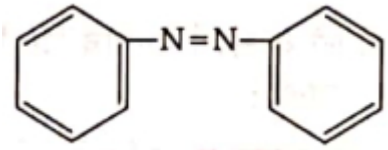

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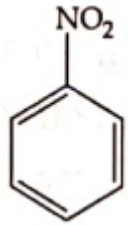


4. A liquid compound (x) can be purified by steam distillation only if it is

(A) Not steam volatile, immiscible with water

(B) Steam volatile, immiscible with water

(C) Not steam volatile, miscible with water

(D) Steam volatile, miscible with water

5. Paper chromatography is an example of

(A) Column chromatography

(B) Adsorption chromatography

(C) Partition chromatography

(D) Thin layer chromatography

6. In Duma's method for estimation of nitrogen, $0.25\,g$ of an organic compound gave $40\,mL$ of nitrogen collected at $300\,K$ temperature and $725\,mm$ pressure. If the aqueous tension at $300\,K$ is $25\,mm$, the percentage of nitrogen in the compound is

(A) 16.76 (B) 15.76 (C) 17.36 (D) 18.20

7. In the Kjeldahl's method for estimation of nitrogen present in a soil sample, ammonia evolved from $0.75\,g$ of sample neutralized $10\,mL$ of $1\,M\,H_2SO_4$. The percentage of nitrogen in the soil is

(A) 37.33 (B) 45.33 (C) 35.33 (D) 43.33

8. Nitrogen detection in an organic compound is carried out by Lassaigne's test. The blue colour formed corresponds to which of the following formulae ?

(A) $Fe_3[Fe(CN)_6]_2$ (B) $Fe_4[Fe(CN)_6]_3$ (C) $Fe_4[Fe(CN)_6]_2$ (D) $Fe_3[Fe(CN)_6]_3$

9. In the estimation of nitrogen by KJeldahl's method, $2.8\,g$ of an organic compound required 20 milli mol of H_2SO_4 for the complete neutralisation of NH_3 gas evolved. The percentage of nitrogen in the sample is?.....%

(A) 20 (B) 10 (C) 40 (D) 30

10. In carius method of estimation of halogen $0.15\,g$ of an organic compound gave $0.12\,g$ of $AgBr$. Find out the percentage.....% of bromine in the compound

(A) 34.04 (B) 58.20 (C) 9.24 (D) 0.12

11. $2.18\,gm$ of an organic compound containg sulphur produces $0.12\,g$ of $BaSO_4$. The percentage.....% of sulphur in the compound is ?

(A) 7.26 (B) 8.98 (C) 10 (D) 6.42

12. $58\ ml$ of $\frac{N}{5}H_2SO_4$ are used to neutralize ammonia given by $1\ g$ of organic compound. Percentage of nitrogen in the compound is

(A) 34.3 (B) 82.7 (C) 16.2 (D) 21.6

13. In Kjeldahl's method, the nitrogen present in the organic compound is quantitatively converted into

(A) Gaseous ammonia

(B) Ammonium sulphate

(C) Ammonium phosphate

(D) Ammonia

14. $0.5\,g$ of hydrocarbon gave $0.9\,g$ water on combustion. The percentage of carbon in hydrocarbon is

(A) 75.8 (B) 80 (C) 56.6 (D) 28.6

15. A gas mixture contains 50% helium and 50% methane by volume. What is the percent by weight of methane in the mixture.....$\%$

(A) 19.97 (B) 0.05 (C) 50 (D) 80

16. When $32.25\,gm$ ethyl chloride dehydro halogenated, if gives 50%. Alkene, what is the mass of product.....gm (atomic mass of chlorine = 35.5)

(A) 14 (B) 28 (C) 64.5 (D) 7

17. In Kjeldahl's method of estimation of N, $CuSO_4$ acts as

(A) Oxidising agent (B) Reducing agent (C) Catalytic agent (D) Hydrolysis agent

18. Which of the following pair of the species has the same percentage of carbon

(A) $CH_3COOH$and C_2H_5OH

(B) $C_6H_{12}O_6$ and $C_{12}H_{22}O_{11}$

(C) $HCOOCH_3$ and $C_{12}O_{22}H_{11}$

(D) CH_3COOH and $C_6H_{12}O_6$

19. An organic compound has an empirical formula CH_2O, its vapour density is 45. The molecular formula of the compounds is

(A) CH_2O (B) C_2H_5O (C) C_2H_2O (D) $C_3H_6O_3$

20. A compound has an empirical formula C_2H_4O. An independent analysis gave a value of 132.16 for its molecular mass. What is the correct molecular formula

(A) $C_4H_4O_5$ (B) $C_{10}H_{12}$ (C) C_7O_3 (D) $C_6H_{12}O_3$

21. The Empirical formula of a compound is CH_2O and its molecular weight is 120. The molecular formula of the compound is

(A) $C_2H_4O_2$ (B) $C_3H_6O_3$ (C) $C_4H_8O_4$ (D) CH_2O

22. An organic compound containing carbon hydrogen and oxygen contains 52.20% carbon and 13.04% hydrogen. Vapour density of the compound is 23. Its molecular formula will be

(A) C_2H_6O (B) C_3H_8O (C) C_4H_8O (D) $C_5H_{10}O$

23. The percentage of N_2 in urea is about

(A) 18.05 (B) 28.29 (C) 46.66 (D) 85.56

24. $0.2595\,g$ of an organic substance in a quantitative analysis yielded $0.35\,g$ of the barium sulphate. The percentage of sulphur in the substance is.....g

(A) 18.52 (B) 182.2 (C) 17.5 (D) 175.2

25. An organic compound with $C = 40\%$ and $H = 6.7\%$ will have the empirical formula

(A) CH_2 (B) CH_2O (C) $C_3H_6O_3$ (D) $C_2H_4O_2$

26. $64\,gm$ of an organic compound contains $24\,gm$ of carbon, $8\,gm$ of hydrogen and the rest oxygen. The empirical formula of the compound is

(A) CH_2O (B) C_2H_4O (C) CH_4O (D) $C_2H_8O_2$

27. A hydrocarbon has $C = 85.72\%$ and remaining H. The hydrocarbon is

(A) C_2H_4 (B) C_2H_6 (C) C_2H_2 (D) CH_4

28. An organic compound has $C = 60\%$, $H = 13.3\%$ and $O = 26.7\%$. Its empirical formula will be

(A) C_3H_6O (B) $C_2H_6O_2$ (C) $C_4H_8O_2$ (D) C_3H_8O

29. On analysis, a saturated hydrocarbon is found to contain 83.70 percent carbon and 16.30% hydrogen. The empirical formula will be (at. wt. of $C = 12$, at. wt. of $H = 1$)

(A) C_3H_6 (B) C_3H_8 (C) C_3H_7 (D) C_6H_{12}

30. A compound has 50% carbon, 50% oxygen and approximate molecular weight is 290. Its molecular formula is

(A) CO (B) C_4O_3 (C) $C_{12}O_9$ (D) C_3O_3

31. An organic compound gave the following results $C = 53.3\%, H = 15.6, N = 31.1\%$, mol. wt. = 45, What is molecular formula of the compound ?

(A) $C_2H_5N_2$ (B) C_2H_5N (C) C_2H_7N (D) C_2H_6N

32. An organic compound gave $C = 92.31\%$ and $H = 7.69\%$. If molecular weight of the compound is 78, its molecular formula is

(A) C_6H_6 (B) C_7H_7 (C) C_6H_{18} (D) C_8H_{20}

33. In Kjeldahl's method for the estimation of nitrogen, the formula used is

(A) $\%N = \frac{1.4\,VW}{N}$ (B) $\%N = \frac{1.4\,NW}{V}$ (C) $\%N = \frac{VNW}{1.8}$ (D) $\%N = \frac{1.4VN}{W}$

34. Empirical formula of a compound is C_2H_5O and its molecular weight is 90. Molecular formula of the compound is

(A) C_2H_5O (B) $C_3H_6O_3$ (C) $C_4H_{10}O_2$ (D) $C_5H_{14}O$

35. An organic compound contains $C = 74.0\%$, $H = 8.65\%$ and $N = 17.3\%$. Its Empirical formula is

(A) C_5H_8N (B) $C_{10}H_{12}N$ (C) C_5H_7N (D) $C_{10}H_{14}N$

36. $0.24\,g$ of an organic compound gave $0.22\,g$ CO_2 on complete combustion. If it contains 1.66% hydrogen, then the percentage of C and O will be

(A) 12.5 and 36.6 (B) 25 and 75 (C) 25 and 36.6 (D) 25 and 80

37. In the estimation of sulphur organic compound on treating with conc. HNO_3 is converted to

(A) SO_2 (B) H_2S (C) H_2SO_4 (D) SO_3

38. An organic compound contains $C = 36\%$ $H = 6\%$ and rest oxygen. Its Empirical formula is

(A) CH_2O (B) $C_2H_3O_3$ (C) CH_2O_2 (D) $C_2H_2O_2$

39. In Lassaigne's test the organic compound is fused with Na followed by extraction with distilled water. Which of the following is not the product of this fusion reaction

(A) NaX (B) $NaCN$ (C) $NaNC$ (D) Na_2S

40. Copper (II) ions gives reddish brown precipitate with potassium ferrocyanide. The formula of the precipitate is

(A) $Cu_4[Fe(CN)_6]$ (B) $Cu_2[Fe(CN)_6]$ (C) $Cu_3[Fe(CN)_6]$ (D) $Cu_3[Fe(CN)_6]_2$

41. In a Lassaignes's test for sulphur in the organic compound with sodium nitroprusside solution the purple colour formed is due to

(A) $[Fe(CN)_5NOS]^{4-}$ (B) $[Fe(CN)_5S]^{2-}$ (C) $[Fe(CN)_5NOS]^{2-}$ (D) $[Fe(CN)_6]^{4-}$

42. If on adding $FeCl_3$ solution to acidified Lassaigne solution, of organic compound a blood redcolouration is producted, it indicates the presence of

(A) S (B) N (C) N and S (D) S and Cl

43. In organic compounds, nitrogen is tested in Lassaigne's test as

(A) $NaNH_2$ (B) $NaCN$ (C) $NaNO_2$ (D) $NaNO_3$

44. In the qualitative analysis of nitrate a brown ring is formed due to the formation of

(A) NO_2 (B) $FeSO_4NO_2$ (C) $N_2O.FeSO_4$ (D) $FeSO_4.NO$

45. In Carius method $0.099\,g$ organic compound gave $0.287\,g$ $AgCl$. The percentage of chlorine in the compound will be

(A) 28.6 (B) 71.7 (C) 35.4 (D) 64.2

46. In Aniline & water mixture, Aniline can be seperate by

(A) Steam distillation

(B) Fractional distillation

(C) Simple distillation

(D) Distillation under reduced pressure

47. A mixture of sand and iodine can be separated by

(A) Crystallisation

(B) Sublimation

(C) Distillation

(D) Fractional distillation

48. A mixture of camphor and benzoic acid can be separated by

(A) Sublimation

(B) Chemical method

(C) Fractional distillation

(D) Extraction with a solvent

49. $p-$ nitrophenol and $o-$ nitrophenol are separated by

(A) Crystallisation

(B) Fractional crystallisation

(C) Distillation

(D) Steam distillation

50. To differentiate between carbon-12, carbon- 13 and carbon- 14, the instrument that you would use in

(A) Infra-red spectrometer

(B) Atomic absorption spectrometer

(C) Mass spectrometer

(D) Ultraviolet spectrometer

51. A mixture of methyl alcohol and acetone can be separated by

(A) Distillation

(B) Fractional distillation

(C) Steam distillation

(D) Distillation under reduced pressure

52. Given below are two statements :

Statement (I) : Kjeldahl method is applicable to estimate nitrogen in pyridine.

Statement (II) : The nitrogen present in pyridine can easily be converted into ammonium sulphate in Kjeldahl method.

In the light of the above statements, choose the correct answer from the options given below.

(A) Both Statement I and Statement II is false

(B) Statement I is false but Statement II is true

(C) Both Statement I and Statement II is true

(D) Statement I is true but Statement II is false

53. Match List I with List II

List-I (Compound)	List-II (Colour)
A $Fe_4[Fe(CN)_6]_3 \cdot xH_2O$	I Violet
B $[Fe(CN)_5NOS]^{4-}$	II Blood Red
C $[Fe(SCN)]^{2+}$	III Prussian Blue
D $(NH_4)_3PO_4 \cdot 12MoO_3$	IV Yellow

Choose the correct answer from the options given below :

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

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

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

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

54. Methods used for purification of organic compounds are based on:

(A) neither on nature of compound nor on the impurity present.

(B) nature of compound only.

(C) nature of compound and presence of impurity.

(D) presence of impurity only.

55. The correct statements among the following, for a "chromatography" purification method is:

(A) Organic compounds run faster than solvent in the thin layer chromatographic plate.

(B) Non-polar compounds are retained at top and polar compounds come down in column chromatography.

(C) R_f of a polar compound is smaller than that of a non-polar compound.

(D) R_f is an integral value.

56. Which of the following statements are correct?

A. Glycerol is purified by vacuum distillation because it decomposes at its normal boiling point.

B. Aniline can be purified by steam distillation as aniline is miscible in water.

C. Ethanol can be separated from ethanol water mixture by azeotropic distillation because it forms azeotrope.

D. An organic compound is pure, if mixed $M.P.$ is remained same.

Choose the most appropriate answer from the options given below :

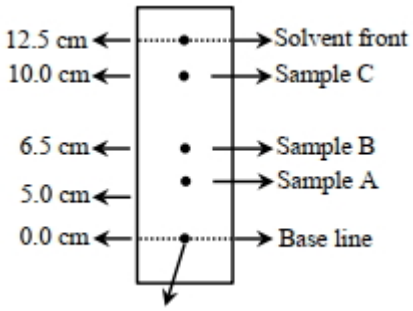
(A) A, B, C only (B) A, C, D only (C) B, C, D only (D) A, B, D only

57. Using the given figure, the ratio of R_t values of sample A and sample C is $x \times 10^{-2}$. Value of x is . . . . . .

(Image)

Samples (A, B, C)

Fig : Paper chromatography of Samples



(A) 50 (B) 40 (C) 30 (D) 20

58. The adsorbent used in adsorption chromatography 1s/are

A. silica gel B. alumina C. quick lime D. magnesia

Choose the most appropriate answer from the options given below :

(A) B only (B) C and D only (C) A and B only (D) A only

59. Following Kjeldahl's method, 1 g of organic compound released ammonia, that neutralised 10 mL of $2M\ H_2SO_4$. The percentage of nitrogen in the compound is_____ %.

(A) 50 (B) 56 (C) 70 (D) 80

60. In Kjeldahl's method for estimation of nitrogen, $CuSO_4$ acts as :

(A) Reducing agent (B) Catalytic agent (C) Hydrolysis agent (D) Oxidising agent

61. Lassaigne's test is used for detection of :

(A) Nitrogen and Sulphur only

(B) Nitrogen, Sulphur and Phosphorous Only

(C) Phosphorous and halogens only

(D) Nitrogen, Sulphur, phosphorous and halogens

62. The Lassiagne's extract is boiled with dil HNO_3 before testing for halogens because,

(A) $AgCN$ is soluble in HNO_3

(B) Silver halides are soluble in HNO_3

(C) Ag_2S is soluble in HNO_3

(D) Na_2S and $NaCN$ are decomposed by HNO_3

63. Appearance of blood red colour, on treatment of the sodium fusion extract of an organic compound with $FeSO_4$ in presence of concentrated H_2SO_4 indicates the presence of element/s

(A) Br (B) N (C) N and S (D) S

64. The fragrance of flowers is due to the presence of some steam volatile organic compounds called essential oils. These are generally insoluble in water at room

temperature but are miscible with water vapour in vapour phase. A suitable method for the extraction of these oils from the flowers is

(A) crystallisation

(B) distillation under reduced pressure

(C) distillation

(D) steam distillation

65. Match List I with List II

LIST I (Technique)	LIST II (Application)
A. Distillation	I. Separation of glycerol from spent-lye
B. Fractional distillation	IIAniline - Water mixture
C. Steam distillation	IIISeparation of crude oil fractions
D. Distillation under reduced pressure	IV.Chloroform Aniline

Choose the correct answer from the options given below:

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

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

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

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

66. 'Adsorption' principle is used for which of the following purification method?

(A) Extractiondd manage bookmarks

(B) Chromatography

(C) Distillatio

(D) Sublimation

67. Which among the following purification methods is based on the principle of "Solubility" in two different solvents?

(A) Column Chromatography

(B) Sublimation

(C) Distillation

(D) Differential Extraction

68. On a thin layer chromatographic plate, an organic compound moved by $3.5\ \mathrm{cm}$, while the solvent moved by $5\ \mathrm{cm}$. The retardation factor of the organic

compound is____ $\times 10^{-1}$

(A) 06 (B) 07 (C) 8 (D) 5

69. Chromatographic technique/s based on the principle of differential adsorption is/are

A. Column chromatography

B. Thin layer chromatography

C. Paper chromatography

Choose the most appropriate answer from the options given below:

(A) B only (B) A only (C) A & B only (D) C only

70. The technique used for purification of steam volatile water immiscible substance is:

(A) Fractional distillation

(B) Fractional distillation under reduced pressure

(C) Distillation

(D) Steam distillation

71. $0.400\,g$ of an organic compound (X) gave $0.376\,g$ of $AgBr$ in Carius method for estimation of bromine. % of bromine in the compound (X) is ..... .(Given: Molar mass $AgBr = 188\,g\,mol^{-1} Br = 80\,g\,mol^{-1}$)

(A) 20 (B) 30 (C) 50 (D) 40

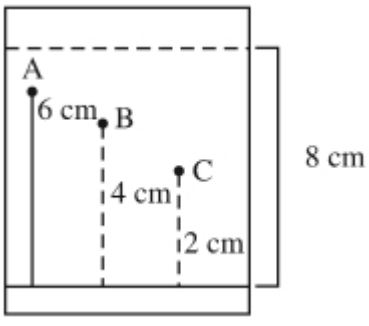
72. $0.5\,g$ of an organic compound (X) with 60% carbon will produce .....$\times 10^{-1}\,g$ of CO_2 on complete combustion.

(A) 10 (B) 11 (C) 12 (D) 13

73. On complete combustion, $0.492\,g$ of an organic compound gave $0.792\,g$ of CO_2.The % of carbon in the organic compound is ..... (Nearest integer)

(A) 42 (B) 43 (C) 48 (D) 44

74. Three organic compounds A, B and C were allowed to run in thin layer chromatography using hexane and gave the following result (see figure). The R_f value of the most polar compound is ..... $\times 10^{-2}$



(A) 24 (B) 25 (C) 23 (D) 22

75. Match List I with List II

List I Element detected	List II Reagent used/Product formed
A Nitrogen	$I.\ Na_2\left[Fe(CN)_5NO\right]$
B Sulphur	$II.\ AgNO_3$
C Phosphorous	$III.\ Fe_4[Fe(CN)_6]_3$
D Halogen	$IV.\ (NH_4)_2MoO_4$

Choose the correct answer from the options given below:

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

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

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

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

76. In sulphur estimation. $0.471\,g$ of an organic compound gave $1.4439\,g$ of barium sulphate.The percentage of sulphur in the compound is ..... (Nearest Integer)(Given: Atomic mass Ba: $137u : S : 32u, O : 16u$)

(A) 41 (B) 42 (C) 40 (D) 38

77. Prolonged heating is avoided during the preparation of ferrous ammonium sulphate to

(A) prevent oxidation (B) prevent reduction

(C) prevent hydrolysis (D) prevent breaking

78. Which of the following statement is correct for paper chromatography ?

(A) Water present in the mobile phase gets absorbed by the paper which then forms the stationary phase.

(B) Water present in the pores of the paper forms the stationary phase.

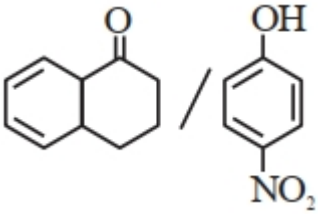
(C) Paper sheet forms the stationary phase.

(D) Paper and water present in its pores together form the stationary phase.

79. Match items of column I and II

Column I (Mixture of compounds)	Column II (Separation Technique)
$A\ H_2O/CH_2Cl_2$	I Crystallization
$B\ Image$	II Differential solvent extraction
C Kerosene/Naphthalene	III Column chromatography
$D\ C_6H_{12}O_6/NaCl$	IV Fractional Distillation

Correct match is :



(A) $A-(iii), B-(iv), C-(ii), D-(i)$

(B) $A-(i), B-(iii), C-(ii), D-(iv)$

(C) $A-(ii), B-(iii), C-(iv), D-(i)$

(D) $A-(ii), B-(iv), C-(i), D-(iii)$

80. Match List I with List II:

List I (Mixture)	List II (Separation Technique)
A $CHCl_3 + C_6H_5NH_2$	I Steam distillation
B $C_6H_{14} + C_5H_{12}$	II Differential extraction
C $C_6H_5NH_2 + H_2O$	III Distillation
D Organic compound in H_2O	IV Fractional distillation

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

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

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

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

81. A sample of $0.125\,g$ of an organic compound when analysed by Duma's method yields $22.78\,mL$ of nitrogen gas collected over KOH solution at $280\,K$ and $759\,mm\,Hg$. The percentage of nitrogen in the given organic compound is. (Nearest integer).

(a) The vapour pressure of water at $280K$ is $14.2\ mmHg$

(b) $R = 0.082L$ atm $K^{-1}mol^{-1}$

(A) 22 (B) 23 (C) 21 (D) 20

82. On complete combustion of $0.492\,g$ of an organic compound containing C, H and $O, 0.7938\,g$ of CO_2 and $0.4428\,g$ of H_2O was produced. The % composition of oxygen in the compound is .....

(A) 46 (B) 44 (C) 43 (D) 42

83. In the estimation of bromine, $0.5\,g$ of an organic compound gave $0.40\,g$ of silver bromide. The percentage of bromine in the given compound is ..... % (nearest integer)

(Relative atomic masses of Ag and Br are $108\,u$ and $80\,u$, respectively).

(A) 340 (B) 90 (C) 188 (D) 34

84. The complete combustion of $0.492\,g$ of an organic compound containing $'C'$,$'H'$ and $'O'$ gives $0.793\,g$ of CO_2 and $0.442\,g$ of H_2O. The percentage of oxygen composition in the organic compound is .... (nearest integer)

(A) 64 (B) 92 (C) 50 (D) 46

85. $0.25\,g$ of an organic compound containing chlorine gave $0.40\,g$ of silver chloride in Carius estimation. The percentage of chlorine present in the compound is ..... [in nearest integer]

(Given: Molar mass of Ag is $108\,g\,mol^{-1}$ and that of Cl is $35.5\,g\,mol^{-1}$)

(A) 40 (B) 140 (C) 80 (D) 143

86. On complete combustion $0.30\,g$ of an organic compound gave $0.20\,g$ of carbon dioxide and $0.10\,g$ of water. The percentage of carbon in the given organic compound is ..... (Nearest Integer)

(A) 18 (B) 180 (C) 65 (D) 74

87. $0.2\,g$ of an organic compound was subjected to estimation of nitrogen by Dumas method in which volume of N_2 evolved (at STP) was found to be $22.400\,mL$. The percentage of nitrogen in the compound is ..... [nearest integer] (Given: Molar mass of N_2 is $28\,mol^{-1}$. Molar volume of N_2 at STP : $22.4\,L$)

(A) 14 (B) 21 (C) 18 (D) 56

88. The separation of two coloured substances was done by paper chromatography. The distances travelled by solvent front, substance A and substance B from the base line are $3.25\,cm$.$2.08\,cm$ and $1.05\,cm$. respectively. The ratio of R_f values of A to B is.....

(A) 5 (B) 3 (C) 8 (D) 2

89. The formula of the purple colour formed in Laissaigne's test for sulphur using sodium nitroprusside is .....

(A) $NaFe[Fe(CN)_6]$ (B) $Na[Cr(NH_3)_2(NCS_4]$

(C) $Na_2[Fe(CN)_5(NO)]$ (D) $Na_4[Fe(CN)_5(NOS)]$

90. During the qualitative analysis of salt with cation y^{2+}, addition of a reagent (X) to alkaline solution of the salt gives a bright red precipitate. The reagent (X) and the cation (y^{2+}) present respectively are .... .

(A) Dimethylglyoxime and Ni^{2+}

(B) Dimethylglyoxime and Co^{2+}

(C) Nessler's reagent and Hg^{2+}

(D) Nessler's reagent and Ni^{2+}

91. Match List$-I$ with List$-II$

List$-I$	List$-II$

(A) Chloroform and Aniline	(I) Steam distillation
(B) Benzoic acid and Napthalene	(II) Sublimation
(C) Water and Aniline	(III) Distillation
(D) Napthalene and Sodium chloride	(IV) Crystallisation

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

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

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

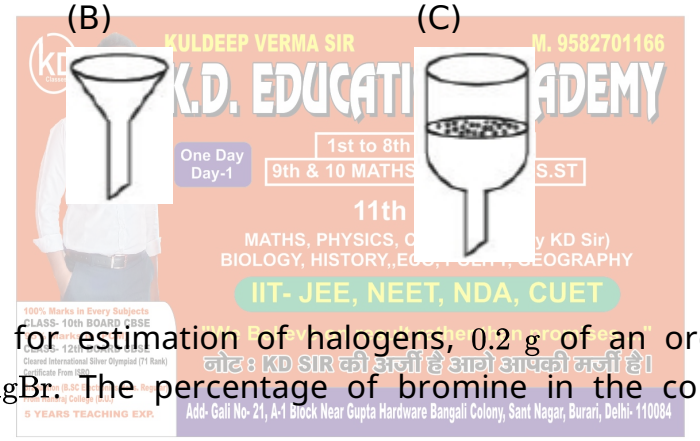
(D) $(A)-(III),(B)-(IV),(C)-(I),(D)-(II)$

92. Kjeldahl's method was used for the estimation of nitrogen in an organic compound. The ammonia evolved from $0.55\,g$ of the compound neutralised $12.5\,mL$ of $1\,M\,H_2SO_4$ solution. The percentage of nitrogen in the compound is ..... (Nearest integer)

(A) 1 (B) 84 (C) 32 (D) 64

93. Which of the following is structure of a separating finnel?

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



94. In Carius method for estimation of halogens, 0.2 g of an organic compound gave 0.188 g of $AgBr$. The percentage of bromine in the compound is ..... . (Nearest integer)

[Atomic mass: $Ag = 108, Br = 80$]

(A) 4 (B) 400 (C) 40 (D) 0.40

95. In the sulphur estimation, 0.471 g of an organic compound gave 1.44 g of barium sulphate. The percentage of sulphur in the compound is .....%. (Nearest integer)

(Atomic Mass of $Ba = 137\,u$)

(A) 142 (B) 42 (C) 471 (D) 233

96. Complete combustion of $750\,g$ of an organic compound provides $420\,g$ of CO_2 and $210\,g$ of H_2O. The percentage composition of carbon and hydrogen in organic compound is 15.3 and ..... respectively. (Round off to the Nearest Integer)

(A) 1 (B) 6 (C) 3 (D) 8

97. Match List$-I$ with List$-II$

List$-I$ Test/Reagents/Observation(s)	List$-II$ Species detected
(a) Lassaigne's Test	(i) Carbon
(b) $Cu(II)$ oxide	(ii) Sulphur
(c) Silver nitrate	(iii) $N, S, P,$ and halogen
(d) The sodium fusion extract gives black precipitate with acetic acid and lead acetate	(iv) Halogen Specifically

The correct match is

(A) $(a)-(iii),(b)-(i),(c)-(ii),(d)-(iv)$

(B) $(a)-(i),(b)-(iv),(c)-(iii),(d)-(ii)$

(C) $(a)-(iii),(b)-(i),(c)-(ii),(d)-(ii)$

(D) $(a)-(i),(b)-(ii),(c)-(iv),(d)-(iii)$

98. Using the provided information in the following paper chromatogram the calculate R_f value of A ..... $\times 10^{-1}$

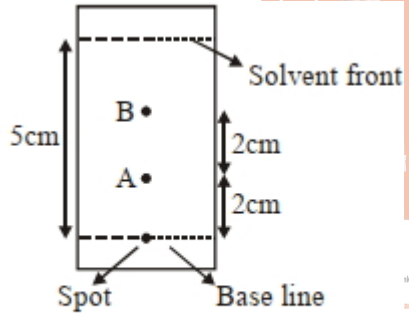


Figure : Paper chromatography for compounds A and B.

(A) 2 (B) 1 (C) 4 (D) 3

99. In chromotography technique, the purification of compound is independent of

(A) Mobility or flow of solvent system

(B) Solubility of the compound

(C) Length of the column or TLC Plate

(D) Physical state of the pure compound

100. Acidic ferric chloride solution on treatment with excess of potassium ferrocyanide gives a Prussian blue coloured colloidal species. It is :

(A) $Fe_4[Fe(CN)_6]_3$ (B) $K_5Fe[Fe(CN)_6]_2$ (C) $HFe[Fe(CN)_6]$ (D) $KFe[Fe(CN)_6]$

101. Which of the following compound is added to the sodium extract before addition of silver nitrate for testing of halogens?

(A) Nitric acid (B) Ammonia

(C) Hydrochloric acid (D) Sodium hydroxide

102. Which of the following is $'a'$ $FALSE$ statement ?

(A) Carius tube is used in the estimation of sulphur in an organic compound

(B) Carius method is used for the estimation of nitrogen in an organic compound

(C) Phosphoric acid produced on oxidation of phosphorus present in an organic compound is precipitated as $Mg_2P_2O_7$ by adding magnesia mixture.

(D) Kjeldahl's method is used for the estimation of nitrogen in an organic compound

103. $0.8\ \mathrm{g}$ of an organic compound was analysed by Kjeldahl's method for the estimation of nitrogen. If the percentage of nitrogen in the compound was found to be $42\,\%$, then .... mL of $1\,\mathrm{M}\ \mathrm{H_2SO_4}$ would have been neutralized by the ammonia evolved during the analysis.

(A) 8 (B) 9 (C) 41 (D) 12

104. When $0.15\ \mathrm{g}$ of an organic compound was analyzed using Carius method for estimation of bromine, $0.2397\ \mathrm{g}$ of $AgBr$ was obtained. The percentage of bromine in the organic compound is ..... (Nearest integer)

[Atomic mass : Silver $= 108$, Bromine $= 80$]

(A) 96 (B) 12 (C) 85 (D) 68

105. The transformation occurring in Duma's method is given below :

$\mathrm{C_2H_7\,N + \left(2x + \frac{y}{2}\right) CuO \rightarrow x\,CO_2 + \frac{y}{2}H_2O + \frac{z}{2}N_2 + \left(2\,x + \frac{y}{2}\right) Cu}$

The value of y is ..... .(Integer answer)

(A) 2 (B) 7 (C) 1 (D) 15

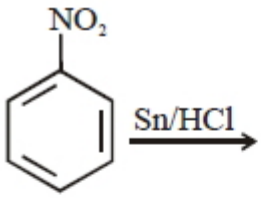
106. In Duma's method of estimation of nitrogen, $0.1840\,g$ of an organic compound gave $30\,mL$ of nitrogen collected at $287\,K$ and $758\,mm$ of Hg pressure. The percentage composition of nitrogen in the compound is ..... . (Round off to the Nearest Integer). [Given : Aqueous tension at $287\,K = 14\,mm$ of Hg]

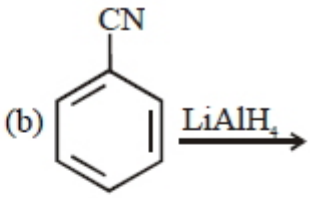
(A) 25 (B) 19 (C) 32 (D) 16

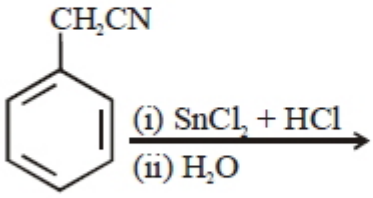
107. In Carius method, halogen containing organic compound is heated with fuming nitric acid in the presence of :

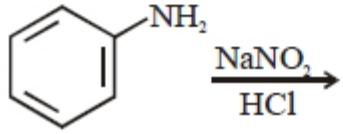
(A) $\mathrm{AgNO_3}$ (B) $\mathrm{HNO_3}$ (C) $\mathrm{BaSO_4}$ (D) $\mathrm{CuSO_4}$

108. The Kjeldahl method of Nitrogen estimation fails for which of the following reaction products ?

(a) 

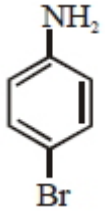
(b) 

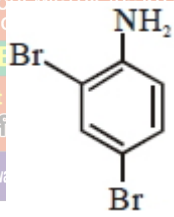
(c) 

(d) 

(A) a and d (B) c and d (C) a, c and d (D) b and c

109. In Carius method of estimation of halogen, $0.172\,g$ of an organic compound showed presence of $0.08\,g$ of bromine. Which of these is the correct structure of the compound:

(A) 

(B) $H_3C - CH_2 - Br$ (C) 

(D) $H_3C - Br$

110. Glycerol is separated in soap industries by

(A) Steam distillation

(B) Differential extraction

(C) Distillation under reduced pressure

(D) Fractional distillation

111. In an estimation of bromine by Carius method, $1.6\,g$ of an organic compound gave $1.88\,g$ of $AgBr$. The mass percentage of bromine in the compound is.....

(Atomic mass, $Ag = 108, Br = 80\,g\,mol^{-1}$)

(A) 50 (B) 55 (C) 45 (D) 40

112. $25\,g$ of an unknown hydrocarbon upon burning produces $88\,g$ of CO_2 and $9\,g$ of H_2O. This unknown hydrocarbon contains.

(A) $24\,g$ of carbon and $1\,g$ of hydrogen

(B) $22\,g$ of carbon and $3\,g$ of hydrogen

(C) $18\,g$ of carbon and $7\,g$ of hydrogen

(D) $20\,g$ of carbon and $5\,g$ of hydrogen

113. The correct match between items I and II is

Item $-I$ (Mixture)	Item $-II$ (Separation method)
(a) H_2O : Sugar	p. Sublimation
(b) H_2O : Aniline	q. Recrystallization
(c) H_2O : Toluene	r. Stem distillation
	s. Differential extraction

(A) $a-d, b-r, c-p$ (B) $a-q, b-r, c-s$

(C) $a-r, b-p, c-s$ (D) $a-q, b-r, c-p$

114. The correct match between item I and item II is

Item I	Item II
(a) Benzaldehyde	(p) Mobile phase
(b) Alumina	(q) Adsorbent
(c) Acetonitrile	(r) Adsorbate

(A) $a \rightarrow q,\ b \rightarrow p,\ c \rightarrow r$ (B) $a \rightarrow r,\ b \rightarrow q,\ c \rightarrow p$

(C) $a \rightarrow q,\ b \rightarrow r,\ c \rightarrow p$ (D) $a \rightarrow p,\ b \rightarrow r,\ c \rightarrow q$

115. Two compounds I and II are eluted by column chromato-graphy(adsorption of $I > II$). Which one of the following is a correct statement?

(A) II moves slower and has higher R_f value than I

(B) II moves faster and has higher R_f value than I

(C) I moves faster and has higher R_f value than II

(D) I moves slower and has higher R_f value than I

116. An organic compound contains C, H and S. The minimum molecular weight of the compound containing 8% sulphur is.....$g\,mol^{-1}$ (atomic weight of $S = 32\,amu$)

(A) 600 (B) 200 (C) 400 (D) 300

117. $1.4\,kg$ of an organic compound was digested according to Kjeldahl 's method and the ammonia evolved was absorbed in $60\,mL$ of $M/10$ H_2SO_4 solution. The excess sulphuric acid required $20\,mL$ of $M/10$ $NaOH$ solution for neutralization. The percentage of nitrogen in the compound is

(A) 10 (B) 3 (C) 24 (D) 5

118. Match the organic compounds in column $-I$ with the Lassaigne's test results in column $-II$ appropriately

Column $-I$	Column $-II$
(A) Aniline	(i) Red colour with $FeCl_3$
(B) Benzene sulfonic acid	(ii) Violet colour with sodium nitroprusside
(C) Thiourea	(iii) Blue colour with hot and acidic solution of $FeSO_4$

(A) $A-(ii);B-(iii);C-(i)$ (B) $A-(iii);B-(i);C-(ii)$

(C) $A-(iii);B-(ii);C-(i)$ (D) $A-(ii);B-(i);C-(iii)$

119. In Carius method of estimation of halogens, $250\,mg$ of an organic compound gave $141\,mg$ of $AgBr$. The percentage of bromine in the compound is :
(at. mass $Ag=108;Br=80$)

(A) 48 (B) 60 (C) 24 (D) 36

120. For the estimation of nitrogen, $1.4\,g$ of an organic compound was digested by Kjeldahl method and the evolved ammonia was absorbed in $60\,mL$ of $\frac{M}{10}$ sulphuric acid. The unreacted acid required $20\,mL$ of $\frac{M}{10}$ sodium hydroxide for complete neutralization. The percentage of nitrogen in the compound is .....%

(A) 6 (B) 10 (C) 3 (D) 5

121. For which of the following compounds Kjeldahl method can be used to determine the percentage of Nitrogen ?

(A) Nitrobenzene (B) Pyridine (C) Alanine (D) Diazomethane

122. Which of the following statements is incorrect ?

(A) Fe^{3+} ion also gives blood red colour with SCN^- ion.

(B) Fe^{2+} ion also gives blood red colour with SCN^- ion.

(C) On passing H_2S into Na_2ZnO_2 solution a white ppt of ZnS is formed.

(D) Cupric ion reacts with excess of ammonia solution to give deep blue colour of $[Cu(NH_3)_4]^{2+}$ ion

123. Which of the following compounds is not expected to show Lassaignes' test for nitrogen ?

(A) Propanenitrile

(B) Hydroxylamine hydrochloride

(C) Nitromethane

(D) Ethanamine

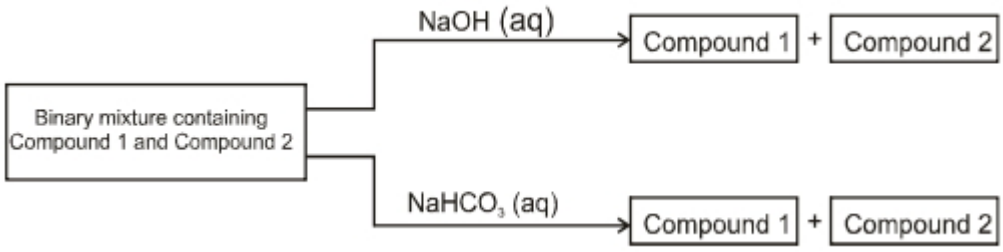
124. Identify the binary mixture(s) that can be separated into individual compounds, by differential extraction, as shown in the given scheme.

(A) C_6H_5OH and C_6H_5COOH

(B) C_6H_5COOH and $C_6H_5CH_2OH$

(C) $C_6H_5CH_2OH$ and C_6H_5OH

(D) $C_6H_5CH_2OH$ and $C_6H_5CH_2COOH$



(A) (B,D) (B) (B,C) (C) (A,D) (D) (C,D)

125. An organic compound on analysis gave the following results : $C=54.5\%$, $O=36.4\%$, $H=9.1\%$. The Empirical formula of the compound is

(A) CH_3O (B) C_2H_4O (C) C_3H_4O (D) C_4H_8O

126. Dumas method involves the determination of nitrogen content in the organic compound in the form of

(A) NH_3 (B) N_2 (C) $NaCN$ (D) $(NH_4)_2SO_4$

127. Quantitative measurement of nitrogen in an organic compounds is done by the method

(A) Berthelot method (B) Belstein method

(C) Lassaigne test (D) Kjheldahl's method

128. Empirical formula of a hydrocarbon containing 80% carbon and 20% hydrogen is

(A) CH (B) CH_2 (C) CH_3 (D) CH_4

129. The vapour density of the methyl ester of an organic monocarboxylic acid is 37. What is the molecular weight of the acid

(A) 46 (B) 60 (C) 70 (D) 74

130. $60\,g$ of a compound on analysis gave $C=24\,g$, $H=4\,g$ and $O=32\,g$. Its Empirical formula is

(A) $C_2H_4O_2$ (B) C_2H_2O (C) CH_2O_2 (D) CH_2O

131. An appropriate method for molecular weight determination of chloroform is

(A) Regnault's method

(B) Diffusion method

(C) Vapour pressure method

(D) Victor Meyer's method

132. On complete combustion $1.4\,gm$ hydrocarbon gave $1.8\,gm$ water. Empirical formula of the hydrocarbon is

(A) CH (B) CH_2 (C) CH_3 (D) CH_4

133. Lassaigne's test is not used for the detection of the element_____in the organic compound

(A) N (B) S (C) Cl (D) O

134. Lassaigne's test is not used for the detection of which element?

(A) Boron (B) Halogens (C) Nitrogen (D) Sulphur

135. In Lassaigne's test the organic compound is fused with Na followed by extraction with distilled water. Which of the following is not the possible product of this fusion reaction

(A) NaX (B) $NaCN$ (C) $NaNC$ (D) Na_2S

136. Lassaigne's test is used to detect

(A) Nitrogen and halogens

(B) Sodium and halogens

(C) Halogens and sulphur

(D) All of the above

137. Which of the following is the best scientific method to test the presence of water in a liquid

(A) Use of anhydrous copper sulphate

(B) Use of litmus paper

(C) Taste

(D) Smell

138. Which element is estimated by Carius method

(A) Carbon (B) Hydrogen (C) Halogen (D) Nitrogen

139. Aniline-water mixture can be separated by

(A) Steam distillation (B) Extraction (C) Chromatography (D) Sublimation

140. Glycerol is purified by

(A) Steam distillation (B) Vacum distillation

(C) Sublimation (D) Simple distillation

141. Aniline-water mixture can be separated by

(A) Steam distillation (B) Extraction (C) Chromatography (D) Sublimation

142. To seprate different fractions of crude oil in petroleum industry, the method used is

(A) Fractional distrillation

(B) Steam distillation

(C) Reduced pressure distillation

(D) Simple distillation

143. Nitrating mixture is

(A) Fuming nitric acid

(B) Mixture of conc. H_2SO_4 and conc. HNO_3

(C) Mixture of nitric acid and anhydrous zinc chloride

(D) None of these

144. Chromatography is used for the purification of

(A) Solids (B) liquids (C) Gases (D) All of these

145. Chromatography is a valuable method for the separation, isolation, purification and identification of the constituents of a mixture and it is based on general principle of

(A) Phase rule (B) Phase distribution

(C) Interphase separation (D) Phase operation

146. In Victor Mayer's method $0.2\,gm$ of an organic substance displaced $56\,ml$ of air at STP the molecular weight of the compound

(A) 56 (B) 112 (C) 80 (D) 28

147. A compound of carbon hydrogen and nitrogen contains three elements in the respective ratio of $9:1:35$ grams. The Empirical formula for the compound is

(A) C_2H_4N (B) C_3H_4N (C) C_3H_6N (D) C_2H_6N

148. If N and S are present in an organic compound during Lassaigne test, then both changes into

(A) Na_2S and $NaCN$ (B) $NaSCN$

(C) Na_2SO_3 and $NaCN$ (D) Na_2S and $NaCNO$

149. Which of the following compound can be separated by steam distillation method

(A) Steam volatile but insoluble in water

(B) Steam volatile but soluble in water

(C) Steam non volatile but sparingly soluble in water

(D) Lquid in steam but solid in water

150. How will you separate a solution (miscible) of benzene $+CHCl_3$

(A) Sublimation (B) Filtration (C) Distillation (D) Crystallisation

----- Nothing is impossible, the word itself says 'I'm possible'! -----