CHEMISTRY

BOOKS - BRILLIANT PUBLICATION

ORGANIC CHEMISTRY: BASIC PRINCIPLES - PART III (PURIFICATION AND CHARACTERISATION OF ORGANIC COMPOUND)

Level I Homework

1. Anthracene can be purified by

A. Distillation

B. Vacuum distillation

C. Steam distillation

D. Sublimation

Answer:

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2. A solid organic substance, that is purified by steam distillation is

A. Orthohydroxy benzaldehyde

B. Orthonitrophenol

C. Bromobenzene

D. Nitrobenzene

Answer:

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3. During steam distillation of an organic liquid, it boils at

A. Slightly above 100°C

B. Slightly below 100°C

C. Much above 100°C

D. Exactly 100°C

Answer:

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4. Refining of crude oil is by

A. Steam distillation

B. Azeotropic distillation

C. Fractional distillation

D. Vacuum distillation

Answer:

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5. Which among the following is purified by vacuum distillation?

A. Aniline

B. Nitrobenzene

C. Propane-1, 2, 3-triol

D. Salicylaldehyde

Answer:

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6. In TLC, the stationary phase is

A. An organic liquid

B. Water

C. Any solid

D. Alumina powder or silica gel

Answer:

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7. The thickness of thin layer adsorbent in TLC is about

A. 0.1 cm

B. 0.2 cm

C. 0.2 mm

D. 0.01 mm

Answer:

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8. The stationary phase in paper chromatography is

A. Silica gel

B. Organic solvent

C. Water

D. Al_2O_3

Answer:

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9. Glycerol is recovered from spent lye (in soap industry) by

A. Steam distillation

B. Vacuum distillation

C. Azeotropic distillation

D. Fractional distillation

Answer:

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10. Lassaigne's extract is prepared by fusion of the organic substance with

A. Li

B. K

C. Na

D. Ca

Answer:

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11. For detection of C and H, organic substance is heated with a metal oxide. The metal oxide is

A. Cu_2O

B. HgO

C. CuO

D. Ag_2O

Answer:

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12. For detection of halogens, the sodium fusion extract is acidified with

A. HCl

B. H_2SO_4

C. HNO_3

D. Acetic acid

Answer:

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13. The silver halide that is insoluble in ammonia is

A. AgCl

B. AgI

C. AgBr

D. AgF

Answer:

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14. The blood red colouration obtained during the test for nitrogen indicates the presence of which elements?

A. Sulphur

B. Both sulphur and nitrogen

C. Carbon, nitrogen and sulphur

D. Halogens and sulphur

Answer:

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15. Formula of sodium nitroprusside is

A. $Na_4\left[Fe(CN)_5NO\right]$

B. $Na_3\left[Fe(CN)_4NO\right]$

C. $Na_2\left[Fe(CN)_3NO\right]$

D. $Na_2\left[Fe(CN)_5NO\right]$

Answer:

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16. For the detection of sulphur, using lead acetate solution, the fusion extract is acidified with

A. dil. HNO_3

B. dil.HCl

C. CH_3COOH

D. dil.H_2SO_4

Answer:

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17. When a phosphorous containing organic compound is strongly heated with Na_2O_2, phosphorous gets converted to

A. Ammonium phosphate

B. Sodium phosphate

C. Sodium phosphide

D. Sodium meta phosphate

Answer:

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18. In Dumas method, nitrogen is estimated as

A. NH_3

B. NO

C. N_2O

D. N_2

Answer:

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19. In Duma's method nitrogen is collected over

A. Water

B. H_2SO_4

C. KOH solution

D. Na_2CO_3 solution

Answer:

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20. In Kjeldahl's method, nitrogen is estimated as

A. N_2 gas

B. $(NH_4)_2SO_4$

C. NH_3

D. NO_2

Answer:

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21. The role of K_2SO_4 in Kjeldahl's method is

A. Catalyst

B. Solvent

C. Boiling point elevator

D. Promoter

Answer:

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22. Carius method is not used for estimation of

A. Sulphur

B. Chlorine

C. Fluorine

D. Phosphorous

Answer:

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23. Lassaigne's test for halogens gave a pale yellow ppt. The halogen is

A. Cl

B. I

C. Br

D. F

Answer:

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24. In Carius method for sulphur estimation, the precipitating reagent is

A. $Ba(NO_3)_2$

B. $CaCl_2$

C. $BaCl_2$

D. $BeSO_4$

Answer:

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25. Phosphorous in an organic compound is estimated as

A. Ammonium phosphate

B. Ammonium molybdate

C. Magnesium ammonium phosphate

D. Ammonium phosphomolybdate

Answer:

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26. The colour of ammonium phosphomolybdate is

A. Orange yellow

B. Canary yellow

C. Reddish brown

D. Golden yellow

Answer:

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27. Aluise method is used for estimation of

A. Nitrogen

B. Carbon

C. Hydrogen

D. Oxygen

Answer:

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28. What is the volume of $\frac{M}{2}H_2SO_4$ that would be required to neutralise, ammonia produced by Kjeldahlisation of 0.6 g urea?

A. 30 ml

B. 40 ml

C. 20 ml

D. 10 ml

Answer:

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29. 0.200 g of an organic compound gave 0.235 g AgI by Carius method. Percentage of iodine in the compound is

A. 50.6

B. 63.5

C. 81.4

D. 25.5

Answer:

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30. 69 g of an organic compound by Aluise method gave 88 g CO_2. Percentage of oxygen in the compound is : 53.33, 60.33, 46.37, 32.33

A. 53.33

B. 60.33

C. 55

D. 32.33

Answer:

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Level Ii

1. The most convenient method to separate a mixture of solid oxalic acid and solid camphor is

A. Crystallisation

B. Sublimation

C. Fractional distillation

D. Vacuum distillation

Answer:

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2. During steam distillation, the vapour pressure of the organic substance is

A. Equal to the vapour pressure of steam

B. Equal to 1 atm

C. Higher than 1 atm

D. Much less than 1 atm

Answer:

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3. Solvent extraction is a method of separation based on which property of components in a mixture?

A. Different vapour pressure

B. Different molar mass

C. Different boiling point

D. Different solubility

Answer:

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4. A mixture of CH_3I (B.P. = 316 K) $CHCl_3$ (B.P. = 334 K) and $(CH_3)_3C - Cl$ (B.P. = 324 K) can be separated by

A. Simple distillation

B. Fractional distillation

C. Steam distillation

D. Vacuum distillation

Answer:

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5. Salicylaldehyde is separated from it's para isomer by

A. Sublimation

B. Fractional distillation

C. Steam distillation

D. Simple distillation

Answer:

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6. An example of partition chromatography is

A. Paper chromatography

B. Thin layer chromatography

C. Column chromatography

D. Adsorption chromatography

Answer:

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7. The formula of Prussian blue is

A. $Fe_4\left[Fe(CN)_6\right]_3$

B. $KFe\left[Fe(CN)_6\right]$

C. Both 1 and 2

D. $K_3\left[Fe(CN)_6\right]$

Answer:

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8. Soda lime test is used for the detection of

A. Nitrogen

B. Sulphur

C. Phosphorous

D. Halogens

Answer:

9. In which of the following compounds, Lassaigne's test for nitrogen is +ve

A. NH_4NO_3

B. $NH_2 - OH$

C. $NH_2 - NH_2$

D. $H_2N - CO - NH_2$

Answer:

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10. When lead acetate solution is added to the fusion extract of thiamine, acidified with acetic acid, the colour of the precipitate obtained is

A. White

B. Yellow

C. Black

D. Reddish brown

Answer:

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11. Which among the following may give a blood red colouration, during Lassaigne's test for nitrogen?

A. Urea

B. Sulphamic acid

C. Sulphanilic acid

D. Both 2 and 3

Answer:

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12. 1.2 g of an organic compound containing C, H and oxygen on combustion gave 2.64 g CO_2

and 1.08 g H_2O. The mass of oxygen in 1.2 g of the compound is

A. 0.72

B. 0.36

C. 0.12

D. $0.84g$

Answer:

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13. An organic compound is estimated through Dumas method and 1 mole of the compound evolved 6 moles of CO_2. 4 moles of H_2O and 1 mole of N_2 gas . The formula of the compound is

A. $C_{12}H_8N$

B. $C_{12}H_8N_2$

C. C_6H_8N

D. $C_6H_8N_2$

Answer:

Watch Video Solution

14. Schiffs nitrometer used in Dumas method for nitrogen estimation contains

A. Anhydrous $CaCl_2$

B. P_2O_5

C. Con. H_2SO_4

D. KOH solution

Answer:

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15. In the Kjeldahl's method for estimation of nitrogen in a soil sample, ammonia evolved from 0.75 g of sample neutralised 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

Answer:

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16. 1g of an organic compound was Kjeldahlised and the NH_3 evolved was absorbed in 50 ml 0.5 M H_2SO_4. The residual acid required 60 ml $\frac{M}{2}NaOH$. Percentage of nitrogen in the compound is

A. 40

B. 28

C. 56

D. 20

Answer:

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17. How many ml N_2 gas (at NTP) will be obtained from 1.2 g urea by the Dumas method?

A. 112 ml

B. 448 ml

C. 224 ml

D. 56 ml

Answer:

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18. 2g of an organic compound gave 1.88 g AgBr in Carius method. Percentage of bromine in the compound is

A. 20

B. 25

C. 28

D. 40

Answer:

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19. 0.32 g of an organic compound gave 0.932 g $BaSO_4$ in Carius method. Percentage of sulphur in the compound is

A. 25

B. 32

C. 40

D. 36

Answer:

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20. In Messenger's method for estimation of sulphur, the oxidising agent used is

A. HNO_3

B. H_2SO_4

C. P_2O_5

D. alk. $KMnO_4$

Answer:

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21. What is the mass of $Mg_2P_2O_7$ that can be obtained from 1g of a phosphorous containing organic compound by Carius method?

Percentage of phosphorous in the compound is 31

A. 0.31 g

B. 0.62 g

C. 1.11 g

D. 0.111 g

Answer:

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22. In the Aluise method, 3g of an organic compound containing oxygen gave $4.4\text{g}\ CO_2$. The percentage of oxygen in the compound is

A. 53.33

B. 55.33

C. 66.33

D. 25.33

Answer:

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23. In a Victor Meyer's apparatus 0.1072 g of a volatile compound produced 20 ml vapour (volume at STP). Molar mass of the compound is

A. 140 g mol^{-1}

B. 120 g mol^{-1}

C. 110 g mol^{-1}

D. 210 g mol^{-1}

Answer:

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24. 0.104 g of a monobasic acid was just neutralised y 10 ml $\frac{N}{20}$ NaOH. Molar mass of the acid is

A. $208 g\ mol^{-1}$

B. $104 g\ mol^{-1}$

C. $122 g\ mol^{-1}$

D. $114 g\ mol^{-1}$

Answer:

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25. The percentage composition of a compound is C = 10%, Cl= 89.2%, H = 0.84%. Empirical formula of the compound is

A. CH_2Cl_2

B. $CHCl_3$

C. CHCl

D. CH_3Cl

Answer:

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26. The molar mass of an organic compound is 120. A probable empirical formula of the compound is

A. CH_2O

B. C_2H_4O

C. C_3H_6O

D. CH_2O_2

Answer:

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27. Insulin contains 3.2% by mass of sulphur. It has 6 atoms of sulphur per molecule. The approximate molecular mass of insulin is .....

A. 4200

B. 6000

C. 6800

D. 6400

Answer:

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28. An organic compound contains 20% carbon. It's vapour density is 120. The number of carbon atoms in one molecule of the compound is

A. 3

B. 2

C. 1

D. 4

Answer:

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29. Among the following organic halogen compounds, the one that will not give ppt. on heating with alcoholic $AgNO_3$ is

A. $CH_2 = CH - CI$

B. $CH_2 = CH - CH_2 - CI$

C.

D. $(CH_3)_3C - CI$

Answer:

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30. The volume of oxygen required for the complete combustion of 20 ml cyclopropane is

A. 60 ml

B. 90 ml

C. 100 ml

D. 110 ml

Answer:

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31. 6g of an Amide on heating with NaOH gave NH_3 Which was neutralised by 200 ml 1 N HCI. Percentage of nitrogen in the compound is

A. 12

B. 60

C. 46.67

D. 26.67

Answer:

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Level Ii Assertion Reason Type Question

1. Assertion : A solid mixture of urea and camphor is not separated by sublimation.

Reason : Camphor is sublimable, but urea is not

A. Both assertion and reason are true and reason is the correct explanation of assertion

B. Both assertion and reason are true and reason is not the correct explanation of assertion

C. Assertion is true and reason is false

D. Both assertion and reason are false

Answer:

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2. Assertion : Ninhydrin reagent is used during the separation of amino acids by TLC

Reason : Each amino acid gives a distinct colour with Ninhydrin

A. Both assertion and reason are true and reason is the correct explanation of assertion

B. Both assertion and reason are true and reason is not the correct explanation of assertion

C. Assertion is true and reason is false

D. Both assertion and reason are false

Answer:

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3. Assertion : Chromatography is the best and latest method of purification/separation of organic compounds.

Reason : In all forms of chromatography there is a stationary phase and mobile phase.

A. Both assertion and reason are true and reason is the correct explanation of assertion

B. Both assertion and reason are true and reason is not the correct explanation of

assertion

C. Assertion is true and reason is false

D. Both assertion and reason are false

Answer:

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4. Assertion : Acetic acid and lactic acid have the same percentage composition.

Reason : Though they have different molecular

formulae they have the same empirical formula.

A. Both assertion and reason are true and reason is the correct explanation of assertion

B. Both assertion and reason are true and reason is not the correct explanation of assertion

C. Assertion is true and reason is false

D. Both assertion and reason are false

Answer:

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5. Assertion : Kjeldahl's method is a failure with Azobenzene.

Reason : Nitrogen of Azobenzene is not completely converted to ammonium sulphate.

A. Both assertion and reason are true and reason is the correct explanation of assertion

B. Both assertion and reason are true and reason is not the correct explanation of assertion

C. Assertion is true and reason is false

D. Both assertion and reason are false

Answer:

6. Assertion : Absence of blood red colouration, during the Lassaigne's test for nitrogen definitely shows the absence of sulphur in the organic compound.

Reason : Organic compounds containing both nitrogen and sulphur will necessarily give blood red colouration during the Lassaigne's test for nitrogen.

A. Both assertion and reason are true and reason is the correct explanation of assertion

B. Both assertion and reason are true and reason is not the correct explanation of assertion

C. Assertion is true and reason is false

D. Both assertion and reason are false

Answer:

7. Assertion : Fluorine in an organic compound cannot be detected by addition of $AgNO_3$ solution to the sodium fusion extract

Reason : AgF is not precipitated, as it is water soluble.

A. Both assertion and reason are true and reason is the correct explanation of assertion

B. Both assertion and reason are true and reason is not the correct explanation of

assertion

C. Assertion is true and reason is false

D. Both assertion and reason are false

Answer:

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8. Assertion : Mixed melting point can be used to test the purity of an organic substances (solid)

Reason : Presence of impurity lowers the melting point.

A. Both assertion and reason are true and reason is the correct explanation of assertion

B. Both assertion and reason are true and reason is not the correct explanation of assertion

C. Assertion is true and reason is false

D. Both assertion and reason are false

Answer:

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