CHEMISTRY

BOOKS - TARGET CHEMISTRY (HINGLISH)

BASIC PRINCIPLES AND TEACHNIQUES IN ORGANIC CHEMISTRY

Classical Thinking

1. Common element in all the organic compounds is _____.

A. nitrogen

B. sulphur

C. phoshorus

D. carbon

Answer: D

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2. The property of self combination of the aatoms of the same element to form long chains is known as :

A. Polymerization

B. catenation

C. homologous series

D. isomerism

Answer: B

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3. Compounds having the same molecular formula but differing in their structural formulae are called as _____.

A. polymers

B. allotropes

C. isomers

D. derivatives

Answer: C

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4. Which of the following statements is WRONG ?

A. Organic compounds have usually low melting point and low boiling point

B. Isomerism is a property of organic compounds.

C. Organic compounds cannot be synthesized in laboratory .

D. Organic compounds are characterised by a functional group .

Answer: C

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5. Which of the following is the CORRECT statement regarding a crystalline substance ?

A. It has unit particles arranged in an orderly and systematic manner .

B. It is generally insoluble in water

C. It does not have a specific shape

D. It does not have a sharp melting point.

Answer: A

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6. Monoclinic sulphur has _____ crystals .

A. hexagonal

B. octahedral

C. needle-shaped

D. triangular

Answer: C

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7. Which of the following is an important criteria for determining the purity of a solid ?

A. Boiling point

B. Melting point

C. Odour

D. All of these

Answer: B

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8. The temperature at which the vapour pressure of a liquid becomes equals to the external (atmospheric) pressure is its

A. Meling point

B. Boiling point

C. Freeezing point

D. Sublimation poing

Answer: B

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9. The process of obaining a solid in its pure crystalline form , from its solution is known as _____.

A. ctystallization

B. sublimation

C. melting

D. distillation

Answer: A

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10. The two solids of variable solubilites are sepatated by the process of _____.

A. Fractional crystallization

B. filration

C. distillation

D. Fractional distillation

Answer: A

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11. In distillation process , a few pieces of broken porcelain are added to the distillation flask to _____.

A. purify the liquid

B. avoid bumping of liquid

C. reduce its boiling point

D. All of these

Answer: B

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12. Separation of binary mixture of acetone and benzene is done by _____.

A. simple distillation

B. fractional distillation

C. fractional crystallisation

D. re - crysallization

Answer: B

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13. In TLC , the relative adsorption of each component of the mixute is expressed in terms of its _____.

A. retardation factor

B. chromatogram factor

C. eluent factor

D. differential factor

Answer: A

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14. The spots of the compounds having the property of fluoresence are detected by placing the TLC plate under _____.

A. ultaviolet light

B. sodium vapour lamp

C. sunlight

D. X-rays

Answer: A

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15. In paper chromatography , the mobile phase (solvent) rises up the chromatography paper due to _____.

A. differential partitioning

B. Capillary action

C. gravitational force

D. differential adsorption

Answer: B

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16. On heating an organic compound with dry CuO, a gas is liberated which turns the line water milky . The gas is _____.

A. H_2

B. O_2

C. CO_2

D. N_2

Answer: C

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17. In Lassaigne method , organic compounds are fused with metallic _____.

A. Potassium

B. magnesium

C. lithium

D. sodium

Answer: D

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18. The sodium fusion extract of an organic compound is boiled with concentrated nitric acid , following by treatment with silver nitrate A white precipitate is obtained which is soluble in ammonium hydroxide . This test confirms the presence of ____.

A. nitrogen

B. chlorine

C. iodine

D. bromine

Answer: B

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19. Sodium fusion extract of an organic compound produces violet colour when treated with sodium nitroprusside . This indicates the presence of _____.

A. phosphorus

B. sulphur

C. iodine

D. bromine

Answer: B

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20. Soda lime test is used to detect one of the following element of organic compound

A. phosphors

B. chlorine

C. nitrogen

D. Oxygen

Answer: D

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21. In the estimation of carbon and hydrogen present in an organic compound ,____ is filled in the U- tube to absorb Water .

A. aqueous KOH

B. Dry CuO

C. anhydrous $CaCl_2$

D. dry $NaCl$

Answer: C

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22. Dumas method is used for the estimation of _____.

A. carbon

B. nitrogen

C. oxygen

D. sulphur

Answer: B

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23. In the dumas method , for the the estimation of nitrogen , 0.84 g of an oranic compound gave 448 mL of nitrogen at S. T .P the percentage of nitrogen in the compound is _____.

A. $33.3\ \%$

B. $66.7\ \%$

C. $50.0\ \%$

D. $60\ \%$

Answer: B

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24. 0.2325 g of organic compound was analysed for nitrogen by Dumas method . 31.7 mL of moist nitrogen was colleted at 25° C and 755.8 mm of Hg pressure , Calculate the percentage of nitrogen in the sample (Aqueous tension of water at $25^\circ C$ is 23.8 mm of Hg)

A. $18\ \%$

B. $19.7\ \%$

C. $15.1\ \%$

D. $20.2\ \%$

Answer: C

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

A. 28.6

B. 71.7

C. 35.4

D. 64.2

Answer: B

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26. 0.40g of an organic compound containing phosphorus gave 0.555 g of $Mg_2P_2O_7$ by usual analysis calculate the % of phosphorus in the organic compound

A. $35\ \%$

B. $40\ \%$

C. $38.75\ \%$

D. $45\ \%$

Answer: C

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27. The formula which represents the sample ratio of atoms in a compound is called:

A. empirical formula

B. molecular formula

C. Molarity

D. molecular formula weight

Answer: A

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28. Empirical formula of compound is CH_2O.If its molecular weight is 180 then the molecular formula of the compound is

A. $C_6H_{12}O_6$

B. $C_3H_6O_3$

C. $C_5H_{10}O_5$

D. $C_4H_8O_4$

Answer: A

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29. bond enthalpy and bond length in organic compounds are ingfflunced by _____.

A. density

B. solubility

C. chemical properties

D. hydrization

Answer: D

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30. The condensed formula for $CH_3CH_2CH_2CH(CH_3)NH_2$ Is _____.

A. $CH_3(CH_2)_4NH_2$

B. $CH_3(CH_2)_2CH(CH_3)NH_2$

C. $CH_3(CH_2)_3CH_2NH_4$

D. $(CH_3)_3CNH_2$

Answer: B

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31. What is the CORRECT bond -line structural formula for $CH_3CH_2CH_2CH_2CH_3$?

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32. Which of the following is NOT a cyclic compound ?

A. Naphthalene

B. Aniline

C. phenol

D. isobutane

Answer: D

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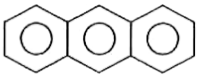
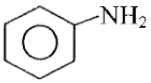
33. The non aromatic compound among the following is -

A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: D

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34. The homologous series consists of homologous which are arranged in the increasing order of their _____.

A. Atmoic mass

B. nuclear mass

C. molecular mass

D. atomic number

Answer: C

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35. What is the difference in the molecular formula of the two successive members in a homologous family ?

A. $-CH_2$-

B. $-OH$

C. $\diagdown\!\!\diagup CH-$

D. $-OCH_2$

Answer: A

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36. The general formula of homologous series of aldehydes is ____ .

A. $R-O-R'$

B. $R-CO-R'$

C. $R-CO-OH$

D. $R-CHO$

Answer: D

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37. Which of the following is an ether ?

A. $CH_3 - O - CH_3$

B. $CH_3 - CH_2 - OH$

C. $CH_3 - CH_2 - CH_2 - OH$

D. $CH_3 - O - H$

Answer: A

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38. To which class of compound does $CH_3CH_2\overset{\overset{O}{||}}{C}HH_2$ belong ?

A. Amines

B. Amides

C. Ketones

D. Aldehydes

Answer: B

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39. $H-\underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}}-\overset{\overset{O}{||}}{C}-O-\underset{\underset{H}{|}}{\overset{\overset{H}{|}}{C}}-H$ is a/ an _____.

A. Carboxylic acid

B. ketone

C. aldehyde

D. ester

Answer: D

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40. Which of the followingg structure reoresents a ketone ?

A. $CH_3CH_2-O-CH_2CH_3$

B. $CH_3CH_2COCH_2CH_3$

C. $CH_3CH_2CH_2CHO$

D. $CH_3CH_2CH(OH)CH_3$

Answer: B

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41. The IUPAC name of the compound $CH_3 - \overset{CH_3}{\underset{|}{C}}H - \overset{CH_3}{\underset{|}{C}}H - CH_3$ is _____.

A. 2, 3 dimethylbutane

B. 2, 2- dimethybutane

C. 2, 3 - dimethylhexane

D. 2, 3, 3 - trimethylbuatane

Answer: A

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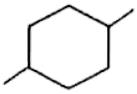
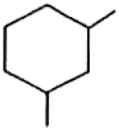
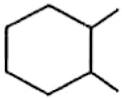
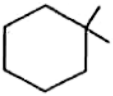
42. Which of the following is 1,1 - dimethycyclohexane ?

A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: D

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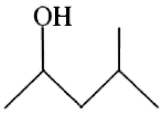
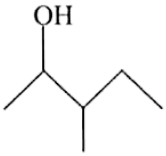
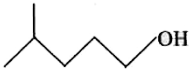
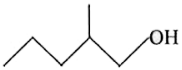
43. Which of the following is 4 - methylpentan - 2 -ol ?

A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: A

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44. What is the CORRECT name for CH_3CH_2CHO ?

A. Ethana[

B. Ethanone

C. propanone

D. propanal

Answer: D

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45. The IUPAC name for

$$CH_3 - \underset{\underset{OH}{|}}{CH} - CH_2 - \overset{\overset{CH_3}{|}}{\underset{\underset{OH}{|}}{C}} - CH_3$$ is:

A. 1, 1 - dimethylbutane -1,3 -diol

B. 4- methylpentane -2,4 diol

C. 2- methylpantane - 2,4 - diol

D. 1,3,3 - trimethylpropane - 1,3 -diol

Answer: C

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46. The effect in which the displacement of electrons is temporaty effect is called _____.

A. electromeric effect

B. temporary effect

C. displacement effect

D. permanent effect

Answer: A

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47. The electron -withdrawing group from the following is _____.

A. $-CH_3$

B. $-CH_2CH_3$

C. $-C(CH_3)_3$

D. $-SO_3H$

Answer: D

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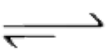
48. Which of the following arrow is used between two structures to indicate that these are resonance forms ?

A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: D

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49. Which of the following is INCORRECT regarding resonance ?

A. More the number of cotribuing resonance structures, , more is the resonance energy .

B. The energy of the resonance hybrid is higher than that of any of the contributing resonance structures .

C. In resonance hybrid , the dotted lines indicate the delocalized electrons.

D. All the atoms sharing the delocalized electrons must lie in or close to the same plane .

Answer: B

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50. Which of the following group shows positive resonance effect ?

A. $-COOH$

B. $-CHO$

C. $-NH_2$

D. $-CN$

Answer: C

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51. Ethyl cation has _____ hyperconjugation structures ,

A. three

B. four

C. five

D. six

Answer: A

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52. The process of breaking of cleavage of a covalent bond is known as ____.

A. bond energy

B. bond fusion

C. bond fission

D. bond enthalpy

Answer: C

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53. Carbon free radicals are _____

A. Carbocation

B. carbanion

C. cation

D. free radical

Answer: A

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54. Carbon free radicals are _____

A. diamagnetic

B. paramagnetic

C. ferromagnetic

D. non- magnetic

Answer: B

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55. Which of the following is an electrophile ?

A. CN^-

B. ROH

C. BCl_3

D. NH_3

Answer: C

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56. A specis that . Donates the electron pair pf H° is termed as a / an _____.

A. nucleophile

B. base

C. electrophile

D. acid

Answer: B

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57. Addition reaction is NOT shown by _____.

A. alkenes

B. aromatic compoounds

C. alkynes

D. alkanes

Answer: D

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58. The rearrangement reaction of isobutyl alcohol to tert-butyl alcohol involves modification of the _____.

A. functional group

B. carbon skeleton

C. molecular formula

D. All of these

Answer: B

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59. The nitrogen content of which of the following compound CANNOT be estimated using Kjeldahl's method ?

A. compounds containing $-NO_2$ group

B. compounds containing azo group

C. compounds cotaining nitrogen in the ring

D. All of these

Answer: D

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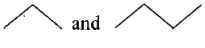
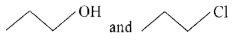
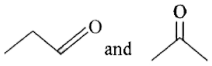
60. which of the following represents a homologous series ?

A. (A)  and

B. (B) 

C. (C) 

D. 

Answer: A

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61. Which of the following is a temporary effect ?

A. electromeric effect

B. Inducticae effect

C. Hyperconjugation

D. all of these

Answer: A

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62. The percentage of _____ in the compound is usually found by difference between the total percentage compositon (100) and the sum of the percentage of all other elements .

A. nitrogen

B. carbon

C. hydrogen

D.

Answer: C

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63. The general formula for ether is _____.

A. $R - O - R'$

B. $R - CO - R'$

C. $R - CO - OH$

D. $R - OH$

Answer: A

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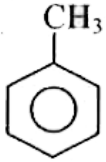
64. which of the following is a cycloalkane ?

A. (A) 

B. 

C. (C) 

(D) 

D.

Answer: B

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65. Which of the following statement is INCORRECT regarding electron movement in organic reactions ?

A. The curved arrow ends at a location to which the electron moves.

B. The curved arrow begins from the point from where the electron is shifted

C. The movement of a single electron is shown by half - headed curved arrow.

D. The atom to which an electron - pair from π — bond shifts will have a positive charge

Answer: D

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66. Which of the following is CORRECT ?

A. Macro -methods require 0.1-0.5 g of sample material

B. micro - methods require 20-50 mg of sample material

C. semi-micro methods require 3-5 mg of sample material .

D. semi-micro and micro methods require same amount of sample material

Answer: A

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67. In TLC , amino acids are easily detected by spraying the TLC plate with _____.

A. ninhydrin solution

B. iodine

C. acetone

D. indigo dye solution

Answer: A

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68. Which of the following is NOT a synthetic fibre ?

A. Terylene

B. Silk

C. Rayon

D. Nylon

Answer: B

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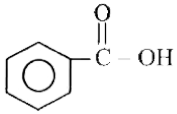
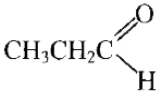
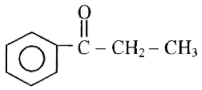
69. Which of the following represents a carboxlic acid ?

A. $CH_3CH_2 - O - CH_3$

B. (B) 

C. (C) 

D. (D) 

Answer: B

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Critical Thinking

1. Which of the following is NOT an organic compound ?

A. Aspirin

B. Carbon dioxide

C. Urea

D. Acetic acid

Answer: B

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2. Most of the organic compounds contain _____ linkages in their molecules .

A. ionic

B. Covalent

C. Coordinate

D. intramolecular

Answer: B

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3. Impure naphthalene is purified by _____.

A. Fractional crystallization

B. fractional distillation

C. differential extraction

D. sublimation

Answer: D

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4. Which of the following is an example of amorphou substance ?

A. Glucose

B. Glass

C. Alum

D. common salt

Answer: B

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5. The presence of impurity in a solid ____.

A. elevates its melting point

B. Lowers its melting point

C. does not affect its melting point

D. none of these

Answer: B

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6. Which of the following statement is INCORRECT ?

A. When point determination , mechanical strring of paraffin oil is required .

B. For boiling point determination , the liquid (organic compound) is taken in an ignition or fusion tube

C. the boiling point of the liquid corresponds to the temperature at which the last bubble comes out from the capillary and the liquid rises into the capillary .

D. The melting point of the solid corresponds to the temperature at which the solid melts completely.

Answer: A

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7. The main requirement for the crystallisation of the substance is that _____.

A. It should be water soluble

B. it should be more soluble in a solvent at lower temperature than at higher temperature

C. It should be more soluble in a solvent at higher temperature than at lower temperature

D. it should used insoluble in water

Answer: C

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8. The solvent used for crystallization should preferably have ___.

A. low boiling point

B. low viscosity

C. no chemical reactivity with the substance to be purified

D. all of these

Answer: D

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9. Benzoic acid is obtained from its saturate aqueous solution by _____.

A. sublimation

B. simple distillation

C. crystallization

D. chromatography

Answer: C

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10. The process to increase the rate of crystallization is known as ____.

A. Filtration

B. re-crystallisation

C. seeding

D. distillation

Answer: C

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11. Which of the of the following processes are involved when simple distillation is carried out

A. Evaporation and condensation

B. Crystallization and filtration

C. Sublimations and condensation

D. Melting and Evaporation

Answer: A

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12. Vavuum distillation is used to purify liquids which _____.

A. Are highly volatile

B. are explosive in nature

C. Decompose at their boiling points

D. have low boiling points

Answer: C

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13. Which of the following statement regarding adsorption chromatography is CORRECT ?

A. Different compounds are adsorbed on an adsorbent to different degrees.

B. paper chromato graphy is a type of adsorption chromatography.

C. The stationary phase used is a gas .

D. The teachnique involved is based on continous differential partitioning .

Answer: A

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14. Organic compounds containing carbon and nitrogen when fused with metallic sodium forms ____.

A. sodium azide

B. Sodium cyanide

C. sodamide

D. sodium cyanate

Answer: B

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15. which of the following is the CORRECT test for detecting nitrogen in the sodium fusion extract of an organic compound containing C, H and N ?

A. Sodium fusion extract is boiled with ferrous sulphate and then acidified with conc . H_2SO_4

B. Sodium fusion extract is boiled with conc , HNO_3 and then treated with silver nitrate

C. sodium fusion extract is boiling with sodium nitroprusside

D. Sodium fusion extract is boiled with conc . HNO_3 and then trated with ferrous sulphate .

Answer: A

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16. The sodium extract of an organic compound on acidification with acetic acid and addition of lead acetate solution gives a black precipitate . The organic compound contains _____.

A. nirtogen

B. halogen

C. sulphur

D. phosphorus

Answer: C

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17. 0.2585 g of organic compound gave 0.3894 g of AgI . The percentage of iodine in the compound is _____ . (Atomic mass of $Ag = 108, , I = 127$)

A. $81.4\ \%$

B. $83.5\ \%$

C. $85\ \%$

D. $86.24\ \%$

Answer: A

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18. 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

Answer: C

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19. Find the empirical formula of the compound which contains $C = 16.27\,\%$, $H = 0.68\,\%$ and $Cl = 72.20\,\%$

A. C_2H_2OCl

B. $C_3HO_2Cl_2$

C. $C_3H_2O_2Cl_2$

D. C_2HOCl_3

Answer: D

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20. Carbon (electronic condiguration $1s^2 2s^2 2p^2$) exhibits tetravalency .this is due to _____.

A. electrostatic forces

B. allotropy

C. hybridization of orbitals

D. affinity for hydrogen

Answer: C

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21. The sp^2 hydridisation of carbon atom gives rise to ____ structure .

A. Linear

B. tetrahedral

C. trigonal

D. octahedral

Answer: C

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22. Which of the following is a heterocylic compound ?

A. Cyclobutane

B. Pyridine

C. Tropone

D. Toluene

Answer: B

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23. Which of the following class of compounds does NOT contain a $C = O$ bond ?

A. Ketones

B. Acid anhydrides

C. Esters

D. Ethers

Answer: D

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24. Homologous differ in their molecular weight by _____

A. 14 units

B. 16 units

C. 15 units

D. 13 units

Answer: A

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25. Which of the following statements is incorrect for a homologous series ?

A. All members can be representred by the same gernal formula

B. All member have similar chemical properties

C. All members have same physical properties

D. All members have same functional group .

Answer: C

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26. In IUPAC nomenclature , the number which indicates the position of the substituent is called as _____.

A. Locant

B. delocant

C. prefix

D. suffix

Answer: A

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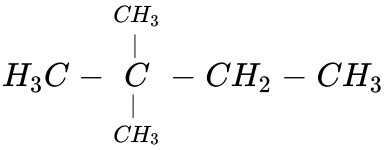
27. Which is the quaternary carbon atom in the given structure ?



A. C-1

B. C-2

C. C-3

D. C-4

Answer: B

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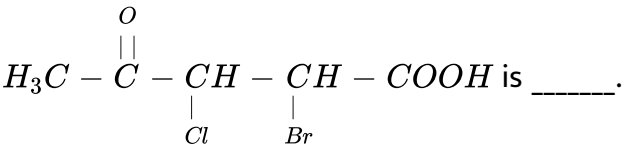
28. The IUPAC name of the compound

 is _____.

A. 32- bromo -3- chloro -4- oxopentanoic acid

B. 4-oxo-3-chloro -2-bromopentanoic acid

C. 4 - carbpxy -2- bromo -3- chlorbutanone

D. 3- chloro-2-bromo-4- oxopentanoic acid

Answer: A

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29. What is the CORRECT name for

$$CH_3 - \underset{\underset{I}{|}}{CH} - \underset{\underset{O}{||}}{C} - CH_2 - CH_3?$$

A. 2- Iodopentan -3-one

B. 3-Iodopentan -2-one

C. 1- Iodopentan -2-one

D. 3-Iodopentan -1-one

Answer: A

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30. Which of the following belongs to $+I$ group ?

A. $-F$

B. $-NO_2$

C. $-COOR$

D. $-CH(CH_3)_2$

Answer: D

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31. Which of the following is an INCORRECT rule for drawing resonance structures ?

A. The nuclei of the atoms never move and the bond angle remains the same .

B. Only π electrons and lone pairs of electrons can move during resonance .

C. The resonance stucture witj the highesy energy is the major resonance contributor .

D. Nagatice charges are more stable on more electronegative atoms such as O, N and S.

Answer: C

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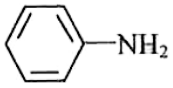
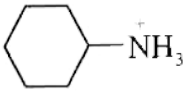
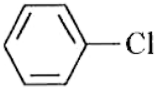
32. In which of the following molecules or ions the resonance effect is NOT Present

A. (A) 

B. (B) 

C. 

(D) 

D.

Answer: B

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33. The least stable free radical among the following is ___ .

A. $\dot{C}H_3$

B. $\dot{C}H_2CH_3$

C. $\dot{C}H(CH_3)_2$

D. $\dot{C}(CH_3)_3$

Answer: A

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34. Stability of carbocation increases as the number of alkyl substituents bonded to positively charged carbon atom _____.

A. increases

B. Decreases

C. remai the same

D. none of these

Answer: A

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35. The allyl cation $CH_2 = CH - CH_2^+$ is symmetrocal about the central carbon atom due to ____.

A. inductive effect

B. Polymerisation

C. resonance

D. all of these

Answer: C

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36. which of the following series contains ONLY nucleophiles ?

A. H_2O, BF_3, H^+

B. NH_3, H_2O, $R-OH$

C. NH_3, H_2O, $AlCl_3$

D. CN^-, NO_2^+, OH^-

Answer: B

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37. Following reaction:

$(CH_3)_3C - Br + H_2O \rightarrow (CH_3)_3C - OH + HBr$ is an example of -

A. elemination reaction

B. substitution reaction

C. combustion reacton

D. addition reaction

Answer: B

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38. Which of the following reactions is an elimination reaction ?

A. $C_2H_5OH + HCl \rightarrow C_2H_5Cl + H_2O$

B. $CH_3CH_2CH_2CH_3 \rightarrow (CH_3)_3CH$

C. $CH_3CH_2Cl \xrightarrow[\Delta]{AlcNaOH} C_2H_4 + HCl$

D. $H_2C = CH_2 + Br_2 \rightarrow CH_2BrCH_2Br$

Answer: C

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39. Urea can be synthesized in labortory by heating _____.

A. NH_4Cl and CO_2

B. NH_4CNO

C. NH_2CONH_2

D. $(NH_4)_2SO_4$

Answer: B

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40. Which is the WRONG statement ?

A. open chain compounds are called aliphatic compounds .

B. Unsaturated compounds cotain multiple bonds in them.

C. Benzenoid compounds cotain an aromatic ring other than benzene

.

D. Carbocyclic compounds contain ring made up of carbon atoms only

.

Answer: C

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41. Which of the following compound does NOT belong to the same class of compounds ?

A. $H-\underset{\underset{O}{||}}{C}-H$

B. $H_3C-\underset{\underset{O}{||}}{C}-CH_3$

C. $H_3C-\underset{\underset{O}{||}}{C}-H$

D. $H-\underset{\underset{O}{||}}{C}-CH_2CH_3$

Answer: B

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42. When an organic compound containing phosphorus is oxidised with fuming nitric acid , phosphorus is converted into _____.

A. P_2O_5

B. H_3PO_2

C. H_3PO_4

D. H_3PO_3

Answer: C

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43. The solvents that can be used to exteract an organic compound present in aqueous solution by differential extraction are _____.

A. acetone ,methanol and ethanol

B. acetone , benzene and methanol

C. benzene , chloroform and petroleum ether

D. Chloroform , ethanol and petroleum ether

Answer: C

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44. An organic compound 'X' (molecular formula $C_6H_5O_2N$) has a six-membered carbocyclic ring with alternating single and double bonds and $-NO_2$ group as a substituent . The compound 'X' is _____.

A. homocyclic and aromatic

B. hetercyclic

C. homocylic but not aromatic

D. aromatic but not homocyclic

Answer: A

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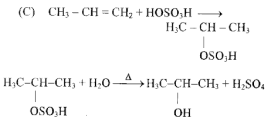
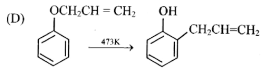
45. which of the following reactions indicate a rerrangement reaction involving modification of functional group ?

A. $CH_3 - \underset{|}{\overset{CH_3}{C}}H - CH_2Oh \overset{H^+}{\Longleftrightarrow} CH_3 - \underset{|}{\overset{CH_3}{\underset{CH_3}{C}}} - OH$

B.

$$H_2c = CH_2 + HOSO_3H \rightarrow H_3C - CH_2 - OSO_3HH_3C - CH_2OS$$

C. 

D. 

Answer: D

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46. The bond line formula of cyclopentane is _____.

A. (A) 

B. (B) 

C. (C) 

D. (D) 

Answer: C

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Competitive Thinking

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

A. sublimation

B. Filtration

C. distillation

D. Crystallisation

Answer: C

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2. The distillation technique most sited for separating glycerol from spent lye in the soap industry is

A. simple distillation

B. fractional distillation

C. steam distillation

D. distillation under reduced pressure

Answer: D

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3. Paper chromatography has following mobile and stationary phases respectively

A. Liquid solid

B. solid ,liquid

C. gas , liquid

D. liquid liquid

Answer: D

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4. In sodium fusion test of organic compounds , N is converted to ___.

A. $NaNH_2$

B. $NaCN$

C. $NaNO_2$

D. $NaNO_3$

Answer: B

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5. In Lassaigne 's test , the organic compound is fused with sodium metal . Which of the following is NOT the possible product of this fusion reaction ?

A. NaX

B. NaCN

C. NaNC

D. Na_2S

Answer: C

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6. The LaSSaigen's extract is boiled with conc. HNO_3 while testing for halogens. By doing so it :

A. increase the concentration of NO_3^-

B. Decomposes Na_2S and NaCn,if formed

C. help in the precipitation of Ag Cl

D. Increases the solubility product of AgCl

Answer: B

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7. In Dumas method ,0.3 g of an organic compound gave 45mL Of nitrogen at STP the percentage of nitrogen is _____.

A. 16.9

B. 18.7

C. 23.2

D. 29.6

Answer: B

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

A. 24

B. 36

C. 48

D. 60

Answer: A

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9. $0.2595g$ of an organic substance in a quantitative analysis yielded $0.35g$ of the barium sulphate. The percentage of sulphur in the subtance is

A. $18.52\ \%$

B. $182.2\ \%$

C. $17.5\ \%$

D. $175.2\ \%$

Answer: A

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10. Which of the following relations gives the value of n =

A. $\frac{\text{Molecular mass}}{\text{Atomic mass}}$

B. $\frac{\text{Molecular mass}}{\text{Mole mass}}$

C. $\frac{\text{Empirical mass}}{\text{Molecular mass}}$

D. $\frac{\text{Empiri,mass}}{\text{Mole mass}}$

Answer: B

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11. Empirical formula of a compound is CH_2O and its vapour density is 30. Molecular formula of the compound is

A. $C_3H_6O_3$

B. $C_2H_4O_2$

C. C_2H_4O

D. CH_2O

Answer: B

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12. An organic compound on analysis gave C=39.9 % ,H= 6.7 % and O =53.4 % .The empricial formula of the compound is

A. CH_2O

B. CHO

C. $C_2H_4O_2$

D. CH_3OH

Answer: A

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13. 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

Answer: B

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14. An organic compound contains $C = 40\,\%$, $H = 13.33\,\%$, and $N = 46.67\,\%$. Its empirical formula will be

A. C_2H_2N

B. C_3H_7N

C. CH_4N

D. CHN

Answer: C

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15. $64g$ of an organic compound contains $24g$ of carbon, $8gm$ of hydrogen and the rest oxygen. The empirical formula of the compound is

A. CH_2O

B. C_2H_4O

C. CH_4O

D. $C_2H_8O_2$

Answer: C

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16. An organic compound having C,H and O has 13.13 % H, 52.14% C, and 34.73% O.. its molar mass is 46.068 $gmol^{-1}$. What are its empirical and molecular formulae ?

A. $C_2H_6O, C_4H_{12}O_2$

B. $CH_3O, C_2H_6O_2$

C. C_2H_6O, C_2H_6O

D. $C_2H_6O_2, C_3H_9O_4$

Answer: C

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17. $0.30g$ of an organic compound containing C, H, and O an combustion yields $0.44g$ of CO_2 and $0.18g$ of H_2O. If its molecular mass is 60μ the molecular mass is formula will be

A. CH_2O

B. C_3H_8O

C. C_4H_6O

D. $C_2H_4O_2$

Answer: D

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18. The shapes of methane, ethene and ethyne molecules are, respectively

A. Tetrahedral , planar and linear

B. tetrahedral , linear and planar

C. pyramidal m planar and linear

D. Tetrahedral , pyramidal and planar

Answer: A

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19. The number of tetirary carbon atoms in the compound $(CH_3)_2CHCH_2C(CH_3)_3$ is

A. 2

B. 3

C. 1

D. 4

Answer: C

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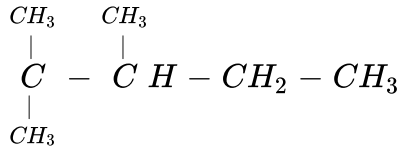
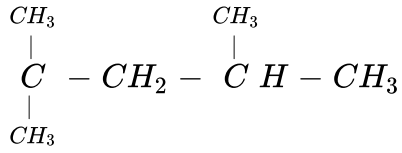
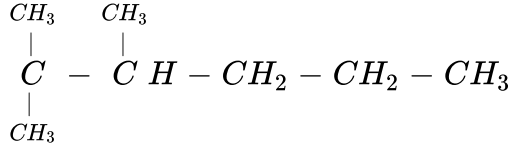
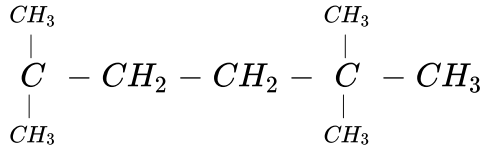
20. Which compound is 2,2,3-trimethyl hexane?

A. 

B. 

C. 

D. 

Answer: C

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21. The structure of isobutyl group in an organic compound is :

A. $CH_3 - CH_2 - CH_2 - CH_2 -$

B. $CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_3}{|}}{C}} -$

C. 

D. $CH_3 - \underset{|}{CH} - CH_2 - CH_3$

Answer: C

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22. IUPAC name of the compound .

$CH_3 - \underset{\underset{CH_3}{|}}{\overset{\overset{CH_2}{|}}{C}}\ H - CH_2 - CH(OH) - CH_3$ is _____.

A. 4- ethylpentan -2-ol

B. 4- methylhexan-2-ol

C. 2-ehtypentan -2-ol

D. 3-methylhexan -2-ol

Answer: B

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23. Identify the CORRECT decreasing order of priority of the functional groups from the following _____.

A. (A) $-CONH_2, \diagdown C=O, -HC=O, -CN$

B. (B) $-CONH_2, -CN, -HC=O, \diagdown C=O$

C. 

D. (D) $-CN, -CONH_2, -HC=O, \diagdown C=O$

Answer: B

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24. $CH_3 - \underset{\underset{OH}{|}}{C}H - CH_2 - \underset{\underset{CH_3}{|}}{C}H - CHO$

A. 4-hydroxy-1-methylpentanal

B. 4-hydroxy-2-methypentanal

C. 3-hydroxy -2- methylpentanal

D. 3-hydroxy -3- methylpentanal

Answer: B

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25. Give IUPAC name of : $CH_3 - CO(CH_2)_2 - CH_3$

A. pentan-2-one

B. pentan -3-one

C. 3-methybutan -2- one

D. 3-methypentanal

Answer: A

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26. The IUPAC name of the compound $CH_2 = CH - CH(CH_3)_2$ is:

A. 1,1-dimethylprop-2-ene

B. 3-methylbut -1 -ene

C. 2-vianylpropane

D. 1-isopropylethylene

Answer: B

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27. The IUPAC name of the following compound is

$$(CH_3)_2CH - CH_2CH = CH - CH = CH - \underset{\underset{C_2H_5}{|}}{C}\ H - CH_3$$

A. 2,7 - dimethylnona -3,5 - diene

B. 2,7- dimethyl -2- ethylheptadiene

C. 2- methyl-7-ethylocta -3,5, - diene

D. 1,1- dimethylhepta -2,4 - diene

Answer: A

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28. Identify the functional group that has electron donating inductive effect.

A. $-COOH$

B. $-CN$

C. CH_3

D. $-NO_2$

Answer: C

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29. which of the following undergo electromeric effect ?

A. Ethyne

B. Ethane

C. Methyl chloride

D. Methyl bromide

Answer: A

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30. Hyperconjugation involes overlap of the _____.

A. $\sigma - \sigma -$ bonds

B. σ bond -p orbital

C. $P - P$ orbitals

D. $\pi - \pi$ bonds

Answer: B

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31. During homolytic fission _____ are formed .

A. carbocations

B. ions

C. carbanions

D. free radicals

Answer: D

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32. Free radicals have ___.

A. bonded electrons

B. unpaired electrons

C. paired electrons

D. no electrons

Answer: B

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33. $\dot{CH_3}$ free radical contains C with following hydridization ____.

A. sp^2

B. sp

C. sp^3

D. none of these

Answer: C

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34. Heterolysis of carbon-chlorine bond produces

A. Two free radicals

B. Two carbinium ions

C. Two carbanions

D. one cation and one anion

Answer: D

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35. Carbanion contains _____ electrons in valence shell

A. six

B. ten

C. eight

D. five

Answer: C

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36. The stability order of the following alkyl free radicals is ____.

$\dot{C}H_3, \dot{C}(CH_3)_3, \dot{C}H(CH_3)_2, \dot{C}H_2CH_3$

A. $\dot{C}H_3 < \dot{C}(CH_3)_3 < \dot{C}H(CH_3)_2 < \dot{C}H_2CH_3$

B. $\dot{C}(CH_3)_3 < \dot{C}H(CH_3)_2 < \dot{C}H_2CH_3 < \dot{C}H_3$

C. $\dot{C}H_2CH_3 < \dot{C}H_3 < \dot{C}H(CH_3)_2 < \dot{C}(CH_3)_3$

D. $\dot{C}H_3 < \dot{C}H_2CH_3 < \dot{C}H(CH_3)_2 < \dot{C}(CH_3)_3$

Answer: D

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37. The shape of the carbonium ion is

A. cylindrical

B. pyramidal

C. planar

D. Tetrahedral

Answer: C

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38. Among the given cation,s the most stable carbonium ions is ?

A. sec - butyl cation

B. tert-buty l cation

C. n-butyl cation

D. none of these

Answer: B

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39. The correct statement regarding electrophile is:

A. Electrophile is a negatively chaged species and can form a bond bu accepting a pair of electrons from a nuclephile .

B. Electrophile is a negatively changed species and can form a bond by accepting a pair of electrons from another electrophile.

C. Electrophiles are generally neutral species and can from a bond by accepting a pair of electrons from a nucleophile

D. Electrophile can be either neutral or positively charged species and can form a bond by accepting a pair of electrons from a nucleophile .

Answer: D

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40. Which of the following statements is not correct for a nucleophile ?

A. Nucleophiles attack low electron density sites

B. Nucleophiles are not electron seeking .

C. Nucleophiles is a Lewis acid .

D. Ammonia is a nculeophile.

Answer: C

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41. Which of the following is NOT a nucleophile ?

A. BF_3

B. NH_3

C. $CH_3CH_2NH_2$

D. H_2O

Answer: A

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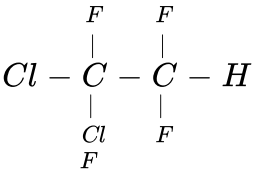
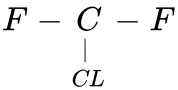
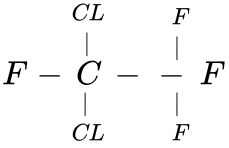
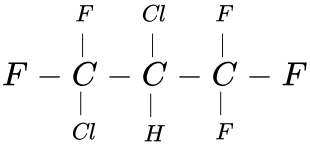
42. Freon-114 used in refrigerator and air conditioners is 1, 2-dichlorotetrafluoroethane. Its structural formula is

A. 

B. 

C. 

D. 

Answer: B

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43. Which of the following alkanes contain primary, secondary, tertiary and quaternary carbon atoms together

A. $(CH_3)_3CH$

B. $(C_2H_5)_3CH$

C. $(CH_3)_3CCH_2CH(CH_3)_2$

D. $(CH_3)_4C$

Answer: C

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44. Which of the following organic compounds has the same hybridization as its combustion product (CO_2) ?

A. Ethane

B. Ethyne

C. Ethene

D. Ethanol

Answer: B

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45. Which of the following is planar ?

A. Methane

B. Acetylene

C. Benzene

D. Isobutane

Answer: C

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46. For the estimation of nitrogen, 1.4 g of an organic compound was digested by Kjeldahl's method and the evolved ammonia was absorbed in 60 mL of $M/10$ sulphuric acid. The unreacted acid required 20 mL of $M/10$ sodium hydroxide for complete neutralisation. The percentage of nitrogen in the compound is

A. 6%

B. 10%

C. 3%

D. 5%

Answer: B

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47. Quantitaive measurement of nitrogen in an organic compound is done by the method ____.

A. Berthelot method

B. Belistein method

C. Lassaigne test

D. Kjeldahl's method

Answer: D

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48. Presence of nitrogen in which of the following compound cannot be detected by Lassaigne's test?

A. Hydrazine

B. Aniline

C. P-Toluidine

D. Picric acid

Answer: A

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49. A hydrocation has 75% C. How much CO_2 in will be obtained on complete combustion of 0.8 g of hydrocarbon?

A. 1.8

B. 2.2

C. 3.2

D. 4.0

Answer: B

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

A. 17.36

B. 18.20

C. 16.76

D. 15.76

Answer: C

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51. Which of the following belongs to the homologous series of $C_5H_8O_2N$?

A. $C_6H_{10}O_3N$

B. $C_6H_8O_2N_2$

C. $C_5H_{10}O_2N_2$

D. $C_6H_{10}O_2N$

Answer: D

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52. The hybridisation of C in diamond , graphite and ethyne in order _____.

A. sp^3, sp, sp^2

B. sp^2, sp^2, sp

C. sp, sp^2, sp^2

D. sp^2, sp^3, sp

Answer: B

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53. Which compound given below has sp^3, sp^2 and sp orbitals in the ratio of $3:2:2$?

A. $H_3C-CH=CH-CH_2-C\equiv CH_3$

B. $H_3C - CH = CH - CH_2 - C \equiv CH$

C. $H_3C - CH_2 - C \equiv C - CH = CH_2$

D. $H_3C - CH = CH - C \equiv CH$

Answer: A

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Evaluation Test

1. In qualitive analysis , an organic compound'A' is heated Dry CuO, CO_2 gas is liberated and H_2O is formed . The same compound 'A' when heated with Na_2O_2 , followed by boiling with HNO_3 and ammonium molybdate gives yellow precipitate . Based on teh tests , the elements present in compound 'A' are _____.

A. C,H and N

B. C, H and P

C. C and P

D. C and H

Answer: B

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2. Which of the the following is an example of elimination reaction ?

A. Chlorination of methane

B. Dehydration of ethanol

C. Nitration of benzene

D. hydrogenation of ethylene

Answer: B

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3. Which of the following pair of miscible liquids require a fractionating column for their separation by distillation ?

A. Liquid A (b.p .334K) and liquid B (b.p .458 K)

B. Liquid A (b.p .334K) and liquid B (b.p .350 K)

C. Liquid A (b.p .329K) and liquid B (b.p .373 K)

D. Liquid A (b.p .329K) and liquid B (b.p .458 K)

Answer: B

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4. Correct pair of compounds which gives blue colouration/precipitate and white precipitate, re- spectively, when their Lassaigne's test separately

A. NH_2CH_2COOH and NH_2CONH_2

B. 

C. CH_3COOH and $ClCH_2COOH$

D. $CH_3CH_2NH_2$ and CH_3CH_2I

Answer: B

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5. 0.4 g of an organic compound gave 0.188 g of silver bromide by halogen estimation maethod The percentage of bromine in the compound is ___.(At .Mass of $Ag = 108$, $Br = 80$)

A. $39.8\ \%$

B. $46\ \%$

C. $20\ \%$

D. $40\ \%$

Answer: C

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