BUDDHA SERIES

(Unit Wise Solved Question & Answers)

Course–B.Sc.1stYear (I Sem)

College–Buddha Degree College

(DDU Code-859)

Department: Science

Subject: Fundamentals Of Chemistry

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Unit-1

1. What is the reaction called when an alkane is converted into an alkene?

A) Cracking
B) Polymerization
C) Hydrogenation
D) Dehydrogenation

Answer: A) Cracking

2. What is the IUPAC name of the alkene with the molecular formula C_3H_6?_

A) Propene
B) Propyne
C) Propane
D) Ethene

Answer: A) Propene

3. Which property decreases with increasing molecular weight of alkenes?_

A) Melting point
B) Boiling point
C) Density
D) Solubility

Answer: D) Solubility

4. What type of reaction do alkenes undergo with hydrogen in the presence of a catalyst?_

A) Addition reaction
B) Elimination reaction
C) Substitution reaction
D) Condensation reaction

Answer: A) Addition reaction

5. What is the geometric isomerism exhibited by alkenes?_

A) Cis-trans isomerism
B) Chain isomerism
C) Position isomerism
D) Optical isomerism

Answer: A) Cis-trans isomerism

6. What is the general formula for alkynes?

A) CnH2n
B) CnH2n+2
C) CnH2n-2
D) CnH2n-4

Answer: C) CnH2n-2

7. Which of the following is an alkyne?

A) $CH_3CH_2CH_3$
B) $CH_3CH=CH_2$
C) $CH_3C\equiv CH$
D) CH_3CH_2OH

Answer: C) $CH_3C{\equiv}CH$

8. What is the IUPAC name of $CH{\equiv}CH$?

A) Ethene
B) Ethyne
C) Ethane
D) Ethanol

Answer: B) Ethyne

9. What is the product formed when ethyne reacts with Br_2?

A) 1,2-Dibromoethene
B) 1,2-Dibromoethane
C) 1-Bromothene
D) 1-Bromoethyne

Answer: B) 1,2-Dibromoethene

10. What is the general formula for alkynes?

A) CnH2n
B) CnH2n+2
C) CnH2n-2
D) CnH2n-4

Answer: C) CnH2n-2

11. In Alkenes the Carbon atoms are connected to each other by a _____
a) Single bond
b) Double bond
c) Triple bond
d) Not connected

Answer: b) Double bond

12. Which among these is not a structural isomer of the compound C_4H_8?
a) But-1-ene
b) But-2-ene
c) But-3-ene
d) 2-methylpropene

Answer: c) But-3-ene

13. Select the incorrect statement regarding alkenes.
a) In alkenes, the carbons are connected by pi bonds
b) Alkenes have almost same physical properties as that of the alkanes
c) Alkenes are less reactive than alkanes
d) Alkenes undergo polymerization reaction

Answer: c) Alkenes are less reactive than alkanes

14. Which among the following is not colourless?
a) Methene
b) Ethene
c) Propene
d) Butene

Answer: b) Ethene

15. Which among the following alkenes is used in the manufacturing of plastics?
a) Butadiene
b) 1,2-butadiene
c) 1,3-butadiene
d) 2-butadiene

Answer: c) 1,3-butadiene

16. 4-chlorobut-1-ene is the name of which among the following alkenes?
a) $CH_2Cl\text{-}CH_2\text{=}CH\text{-}CH_2$
b) $CH_2Cl\text{-}CH_2\text{-}CH\text{-}CH_2$
c) $CH_2Cl\text{=}CH_2\text{-}CH\text{=}CH_2$
d) $CH_2Cl\text{-}CH_2\text{-}CH\text{=}CH_2$

Answer: d) $CH_2Cl\text{-}CH_2\text{-}CH\text{=}CH_2$

17. Ethylene on reaction with bromine forms which among the following product?
a) $BrH_2C\text{-}CH_2Br$
b) $BrH_2C\text{=}CH_2Br$
c) $Br_2HC\text{=}CHBr_2$
d) $Br_2HC\text{-}CHBr_2$

Answer: a) $BrH_2C\text{-}CH_2Br$

18. Which of the following compounds react most readily with $Br_{(g)}$?

(a) C_2H_2

(b) C_3H_6

(c) C_2H_4

(d) C_4H_{10}

Answer: (b) C_3H_6

19. When propene reacts with HBr in the presence of peroxide, it gives rise to

(a) allyl bromide

(b) isopropyl bromide

(c) n-propyl bromide

(d) 3-bromopropane

Answer: (c) n-propyl bromide

20. Find the alkene with maximum stability

(a) cis-2-Butene

(b) trans-2-Butene

(c) 1-Butene

(d) All have the same stability

Answer: (b) trans-2-Butene

21. Ethylene bromide on treatment with Zn gives

(a) Alkyne

(b) Alkene

(c) Alkane

(d) All of the above

Answer: (b) Alkene

22. Which of the following reactions is common in alkenes?

(a) Addition

(b) Elimination

(c) Substitution

(d) Superposition

Answer: (a) Addition

23. Cis-trans isomerism in alkenes is due to

(a) chiral carbon

(b) free rotation about single bond

(c) free rotation about the double bond

(d) restricted rotation about the double bond

Answer: (d) restricted rotation about the double bond

24. Baeyer's reagent is used to detect

(a) glucose

(b) double bonds

(c) oxidation

(d) reduction

Answer: (b) double bonds

25. Which of the following reagents will form 1-propanol from propene?

(a) B_2H_6, H_2O_2, OH^-

(b) Aq. KOH

(c) H_2O, H_2SO_4

(d) $Hg(OAc)_2$, $NaBH_4/H_2O$

Answer: (a) B_2H_6, H_2O_2, OH^-

26. Ethene is prepared from chloroethane this is an example of a reaction _____
a) from alkynes
b) removal of vicinal dihalides
c) acidic dehydrogenation
d) dehydrohalogenation

Answer: d) dehydrohalogenation

27. Select the incorrect statement.
a) The addition reactions occur more frequently in the alkenes than the alkynes
b) The pi system of the alkynes gets weakened when they lose the pi atoms
c) Alkynes readily undergo oligomerization
d) Alkynes do not undergo polymerization

Answer: d) Alkynes do not undergo polymerization

28. Select the incorrect statement regarding terminal alkynes.
a) Methylacetylene is an example of terminal alkynes
b) Terminal alkynes are more acidic when compared with alkenes
c) Terminal alkynes are not as acidic as alkanes
d) These have a replaceable acidic hydrogen atom

Answer: c) Terminal alkynes are not as acidic as alkanes

29. Majority of the alkynes are not prepared from/by _____
a) Condensation
b) Acetylene
c) Dehydrohalogenation
d) Hydrogenation

Answer: d) Hydrogenation

30. Alkynes cannot be prepared from _____
a) Ketones
b) Alcohols
c) Aldehydes
d) Other alkynes

Answer: b) Alcohols

31. Identify the incorrect statement.
a) Alkynes exists in gaseous state
b) They are soluble in water
c) They are soluble in organic solvents
d) Alkynes have a very good boiling point

Answer: b) They are soluble in water

32. Which among the following product is formed when ethyne undergoes hydrogenation?
a) Formaldehyde
b) Formic acid
c) Acetaldehyde
d) Acetic acid

Answer: c) Acetaldehyde

33. Are alkynes more reactive than alkenes?
a) Yes
b) No
c) Cannot say
d) Maybe

Answer: b) No

34. Alkynes are _____ in water and the melting point _____ with increase in molar mass.
a) soluble, decrease
b) insoluble, increase

c) insoluble, decrease
d) soluble, increase

Answer: b) insoluble, increase

35. Alkynes show _____ reactions.
a) neither electrophilic nor nucleophilic addition
b) nucleophilic addition only
c) electrophilic only
d) both electrophilic and nucleophilic addition

Answer: d) both electrophilic and nucleophilic addition

36. What is the simplest alkyne?

A. Ethene
B. Ethyne
C. Methane
D. Propane

Answer: B. Ethyne

37. What type of hybridization is present in alkynes?

A. sp^3
B. sp^2
C. sp
D. None of the above

Answer: C. sp

38. Which of the following reactions is characteristic of alkynes?

A. Hydrogenation
B. Halogenation
C. Hydration
D. All of the above

Answer: D. All of the above

39. What is the IUPAC name of acetylene?

A. Ethyne
B. Ethene
C. Ethane
D. Propane

Answer: A. Ethyne

40. When an alkyne reacts with cold dilute potassium permanganate, what product is formed?

A. Alcohol
B. Ketone

C. Diol
D. Aldehyde

Answer: C. Diol

41. What is the major product when propyne undergoes hydroboration-oxidation?

A. Propanol
B. Propanone
C. Propanal
D. Propane

Answer: C. Propanal

42. How many π\piπ-bonds are present in an alkyne molecule?

A. 0
B. 1
C. 2
D. 3

Answer: C. 2

43. What is the general formula for alkenes?

A. CnH2n+2

B. CnH2n
C. CnH2n−2
D. CnHn+1

Answer: B. CnH2nC_nH_{2n}CnH2n

44. What type of hybridization is present in alkenes?

A. sp^3
B. sp^2
C. sp
D. None of the above

Answer: B. sp^2

45. Which reaction is a characteristic test for the presence of an alkyne?

A. Bromine water test
B. Baeyer's test (cold $KMnO_4$)
C. Ammoniacal silver nitrate test
D. Lucas test

Answer: C. Ammoniacal silver nitrate test

Unit- 2

1. Which reagent is used for the hydrogenation of alkenes and alkynes?

A. Ozone (O_3)
B. Bromine water
C. Hydrogen with palladium or nickel catalyst
D. Potassium permanganate

Answer: C. Hydrogen with palladium or nickel catalyst

2. What is the product of the hydration of ethene in the presence of H2SO4H_2SO_4H2SO4 and water?

A. Ethanol
B. Ethanal
C. Ethyne
D. Ethane

Answer: A. Ethanol

3. How many π-bonds are present in an alkyne?

A. 0
B. 1
C. 2
D. 3

Answer: C. 2

4. Which of the following undergoes an electrophilic addition reaction?

A. Ethane
B. Ethene
C. Benzene
D. Methane

Answer: B. Ethene

5. What is the major product when propene reacts with HBr in the presence of peroxide?

A. 1-Bromopropane
B. 2-Bromopropane
C. Propanol
D. Propanal

Answer: A. 1-Bromopropane
6. What is the term for the spatial arrangement of atoms in a molecule?

A) Stereochemistry

B) Structural chemistry

C) Organic chemistry

D) Physical chemistry

Answer: A) Stereochemistry

7. Which of the following molecules is an example of a chiral molecule?

A) CH_3 CH_2 OH

B) CH_3 CH_2 CH_3

C) CH_3 $CHOHCH_3$

D) CH_3 $COCH_3$

Answer: C) CH_3 $CHOHCH_3$

8. What is the term for a molecule that is not superimposable on its mirror image?

A) Achiral

B) Chiral

C) Meso

D) Racemic

Answer: B) Chiral

9. Which of the following is an example of a meso compound?

A) (R,R)-2,3-dihydroxybutane

B) (R,S)-2,3-dihydroxybutane

C) (S,S)-2,3-dihydroxybutane

D) (R,R)-2,3-dihydroxybutane-1,4-diol

Answer: B) (R,S)-2,3-dihydroxybutane

10. What is the term for a mixture of equal amounts of two enantiomers?

A) Racemic mixture

B) Meso mixture

C) Enantiomeric mixture

D) Diastereomeric mixture

Answer: A) Racemic mixture

11. Which of the following is an example of a diastereomer?

A) (R,R)-2,3-dihydroxybutane and (S,S)-2,3-dihydroxybutane

B) (R,R)-2,3-dihydroxybutane and (R,S)-2,3-dihydroxybutane

C) (R,R)-2,3-dihydroxybutane and (S,R)-2,3-dihydroxybutane

D) (R,R)-2,3-dihydroxybutane and (R,R)-2,3-dihydroxybutane-1,4-diol

Answer: B) (R,R)-2,3-dihydroxybutane and (R,S)-2,3-dihydroxybutane

12. What is the term for the process by which a molecule is converted into its enantiomer?

A) Racemization

B) Epimerization

C) Diastereomerization

D) Enantiomerization

Answer: A) Racemization

13. Which of the following is an example of a Fischer projection?

A) A 2D representation of a molecule with horizontal lines representing bonds in the plane of the paper

B) A 2D representation of a molecule with vertical lines representing bonds in the plane of the paper

C) A 3D representation of a molecule with balls and sticks

D) A 3D representation of a molecule with space-filling models

Answer: A) A 2D representation of a molecule with horizontal lines representing bonds in the plane of the paper

14. What is the term for the configuration of a stereocenter that is opposite to the configuration of another stereocenter?

A) Syn

B) Anti

C) Cis

D) Trans

Answer: B) Anti

15. Which of the following molecules is an example of a molecule with a plane of symmetry?

A) CH_3 $CHOHCH_3$

B) CH_3 CH_2 OH

C) CH_3 $COCH_3$

D) CH_3 CH_2 CH_3

Answer: C) CH_3 $COCH_3$

16.What is the term for the process by which a molecule is converted into its diastereomer?

A) Racemization

B) Epimerization

C) Diastereomerization

D) Enantiomerization

Answer: C) Diastereomerization

17. Which of the following is an example of a molecule with a center of symmetry?

A) CH_3 $CHOHCH_3$

B) CH_3 CH_2 OH

C) CH_3 $COCH_3$

D) CH_3 CH_2 CH_3

Answer: C) CH_3 $COCH_3$

18.What is the term for the configuration of a stereocenter that is the same as the configuration of another stereocenter?

A) Syn

B) Anti

C) Cis

D) Trans

Answer: A) Syn

19. What is the term for the process of separating a racemic mixture into its individual enantiomers?

A) Resolution

B) Racemization

C) Epimerization

D) Diastereomerization

Answer: A) Resolution

20. Which of the following statements about diastereomers is true?

A) They are stereoisomers that are not mirror images of each other.

B) They are stereoisomers that are mirror images of each other.

C) They are stereoisomers that have the same physical and chemical properties.

D) They are stereoisomers that have different physical and chemical properties.

Answer: A) They are stereoisomers that are not mirror images of each other.

21. What is the term for the configuration of a molecule that is not superimposable on its mirror image?

A) Chiral

B) Achiral

C) Meso

D) Racemic

Answer: A) Chiral

22. Which of the following molecules is an example of a meso compound?

A) (R,R)-2,3-dihydroxybutane

B) (S,S)-2,3-dihydroxybutane

C) (R,S)-2,3-dihydroxybutane

D) (R,R)-2,3-dihydroxybutane-1,4-diol

Answer: C) (R,S)-2,3-dihydroxybutane

23. What is the term for the process of converting a molecule into its enantiomer?

A) Racemization

B) Epimerization

C) Diastereomerization

D) Enantiomerization

Answer: A) Racemization

24. Which of the following statements about enantiomers is true?

A) They are stereoisomers that are mirror images of each other.

B) They are stereoisomers that are not mirror images of each other.

C) They are stereoisomers that have the same physical and chemical properties.

D) They are stereoisomers that have different physical and chemical properties.

Answer: A) They are stereoisomers that are mirror images of each other.

25.What is the primary reason for the increased density of a liquid compared to its gas phase?

A) Increased molecular attraction

B) Decreased molecular attraction

C) Increased molecular size

D) Decreased molecular size

Answer: A) Increased molecular attraction

26. Which of the following properties of a liquid is dependent on the strength of intermolecular forces?

A) Viscosity

B) Surface tension

C) Density

D) All of the above

Answer: D) All of the above

27. What is the term for the energy required to separate the molecules of a liquid from each other?

A) Heat of fusion

B) Heat of vaporization

C) Cohesive energy

D) Adhesive energy

Answer: C) Cohesive energy

28.Which of the following liquids has the highest surface tension?

A) Water

B) Mercury

C) Ethanol

D) Glycerol

Answer: B) Mercury

29. What is the term for the property of a liquid that opposes the change in its shape?

A) Viscosity

B) Elasticity

C) Surface tension

D) Cohesion

Answer: A) Viscosity

30. Which of the following factors affects the viscosity of a liquid?

A) Temperature

B) Pressure

C) Molecular size

D) All of the above

Answer: D) All of the above

31. What is the term for the flow of a liquid through a narrow tube?

A) Viscous flow

B) Laminar flow

C) Turbulent flow

D) Capillary flow

Answer: D) Capillary flow

32. Which of the following liquids exhibits non-Newtonian behavior?

A) Water

B) Ethanol

C) Glycerol

D) Ketchup

Answer: D) Ketchup

33.What is the term for the pressure exerted by a liquid at equilibrium?

A) Hydrostatic pressure

B) Vapor pressure

C) Osmotic pressure

D) Capillary pressure

Answer: A) Hydrostatic pressure

34. Which of the following factors affects the boiling point of a liquid?

A) Temperature

B) Pressure

C) Molecular size

D) All of the above

Answer: B) Pressure

35. What is the term for the process of a liquid changing to a gas?

A) Melting

B) Boiling

C) Evaporation

D) Condensation

Answer: B) Boiling

36. Which of the following liquids has the highest heat of vaporization?

A) Water

B) Ethanol

C) Glycerol

D) Mercury

Answer: A) Water

37. What is the term for the property of a liquid that determines its ability to dissolve other substances?

A) Solubility

B) Viscosity

C) Surface tension

D) Cohesion

Answer: A) Solubility

38. Which of the following factors affects the solubility of a liquid?

A) Temperature

B) Pressure

C) Molecular size

D) All of the above

Answer: A) Temperature

39. What is the term for the process of a liquid changing to a solid?

A) Melting

B) Boiling

C) Evaporation

D) Freezing

Answer: D) Freezing

40. Which of the following liquids has the highest freezing point?

A) Water

B) Ethanol

C) Glycerol

D) Mercury

Answer: D) Mercury

41. What is the term for the property of a liquid that determines its ability to flow?

A) Viscosity

B) Elasticity

C) Surface tension

D) Cohesion

Answer: A) Viscosity

42. Which of the following factors affects the viscosity of a liquid?

A) Temperature

B) Pressure

C) Molecular size

D) All of the above

Answer: D) All of the above

43. What is the term for the flow of a liquid through a porous material?

A) Viscous flow

B) Laminar flow

C) Turbulent flow

D) Capillary flow

Answer: D) Capillary flow

Unit – 3

1. What type of isomerism is exhibited by molecules that have the same molecular formula but differ in the arrangement of atoms in space?

A) Structural isomerism

B) Stereoisomerism

C) Tautomeric isomerism

D) Conformational isomerism

Answer: B) Stereoisomerism

2. Which of the following is an example of stereoisomerism?

A) Butane and isobutane

B) Glucose and fructose

C) D-glucose and L-glucose

D) Ethanol and dimethyl ether

Answer: C) D-glucose and L-glucose

3. What is the term for molecules that are non-superimposable mirror images of each other?

A) Enantiomers

B) Diastereomers

C) Conformers

D) Tautomers

Answer: A) Enantiomers

4. Which type of isomerism is exhibited by molecules that have the same molecular formula and bond sequence but differ in the three-dimensional arrangement of atoms?

A) Structural isomerism

B) Stereoisomerism

C) Conformational isomerism

D) Configurational isomerism

Answer: B) Stereoisomerism

5. What is the term for molecules that are stereoisomers but not mirror images of each other?

A) Enantiomers

B) Diastereomers

C) Conformers

D) Tautomers

Answer: B) Diastereomers

6. What is the term for a molecule that is non-superimposable on its mirror image?

A) Chiral

B) Achiral

C) Meso

D) Racemic

Answer: A) Chiral

7. Which of the following is a requirement for a molecule to be chiral?

A) Presence of a double bond

B) Presence of a triple bond

C) Presence of a stereocenter

D) Presence of a functional group

Answer: C) Presence of a stereocenter

8. What is a stereocenter?

A) An atom that is bonded to four different groups

B) An atom that is bonded to three different groups

C) An atom that is bonded to two different groups

D) An atom that is bonded to one functional group

Answer: A) An atom that is bonded to four different groups

9. Which of the following molecules is chiral?

A) Methane

B) Ethane

C) Propane

D) 2-Butanol

Answer: D) 2-Butanol

10. What is the term for a mixture of equal amounts of two enantiomers?

A) Racemic mixture

B) Meso compound

C) Diastereomeric mixture

D) Enantiomeric mixture

Answer: A) Racemic mixture

11. What is the relationship between enantiomers?

A) They are superimposable mirror images

B) They are non-superimposable mirror images

C) They are identical molecules

D) They are diastereomers

Answer: B) They are non-superimposable mirror images

12. Which of the following properties is the same for enantiomers?

A) Melting point

B) Boiling point

C) Solubility

D) Specific rotation

Answer: A, B, and C (all except specific rotation)

13. What is the term for a pair of stereoisomers that are not enantiomers?

A) Diastereomers

B) Enantiomers

C) Conformers

D) Tautomers

Answer: A) Diastereomers

14. Which of the following is an example of diastereomers?

A) D-glucose and L-glucose

B) D-glucose and D-mannose

C) D-glucose and D-galactose

D) D-glucose and L-mannose

Answer: B, C, or D (all are examples of diastereomers)

15. What is the relationship between diastereomers?

A) They are superimposable mirror images

B) They are non-superimposable mirror images

C) They are stereoisomers that are not enantiomers

D) They are identical molecules

Answer: C) They are stereoisomers that are not enantiomers

16. What is a Fischer projection?

A) A two-dimensional representation of a molecule

B) A three-dimensional representation of a molecule

C) A representation of a molecule's conformation

D) A representation of a molecule's configuration

Answer: A) A two-dimensional representation of a molecule

17. In a Fischer projection, which bonds are represented by horizontal lines?

A) Bonds coming out of the plane of the page

B) Bonds going into the plane of the page

C) Bonds in the plane of the page

D) Bonds that are not specified

Answer: A) Bonds coming

18. What is the term for the rotation of plane-polarized light by a chiral molecule?

A) Optical activity

B) Stereoisomerism

C) Chirality

D) Conformational isomerism

Answer: A) Optical activity

19. Which of the following molecules is optically active?

A) Achiral molecule

B) Chiral molecule

C) Meso compound

D) Racemic mixture

Answer: B) Chiral molecule

20. What is the specific rotation of a molecule?

A) The amount of rotation of plane-polarized light

B) The direction of rotation of plane-polarized light

C) A measure of the rotation of plane-polarized light under specific conditions

D) The concentration of the solution

Answer: C) A measure of the rotation of plane-polarized light under specific conditions

21. Which of the following is a method for resolving a racemic mixture?

A) Crystallization

B) Distillation

C) Chromatography

D) All of the above

Answer: D) All of the above

22. What is the term for a molecule that has a superimposable mirror image?

A) Chiral

B) Achiral

C) Meso

D) Racemic

Answer: B) Achiral

24. Which of the following is an example of a meso compound?

A) Tartaric acid

B) Glucose

C) Fructose

D) Ethanol

Answer: A) Tartaric acid

25. What is the Cahn-Ingold-Prelog (CIP) system used for?

A) Assigning configuration to stereocenters

B) Predicting the reactivity of molecules

C) Determining the stability of molecules

D) Assigning conformation to molecules

Answer: A) Assigning configuration to stereocenters

26. Which of the following is a stereochemical descriptor?

A) R/S

B) E/Z

C) cis/trans

D) All of the above

Answer: D) All of the above

27. What is the R/S configuration based on?

A) The priority of substituents

B) The molecular weight of substituents

C) The polarity of substituents

D) The reactivity of substituents

Answer: A) The priority of substituents

28. Which of the following is a correct assignment of configuration using the CIP system?

A) R-configuration for a clockwise arrangement of priorities

B) S-configuration for a clockwise arrangement of priorities

C) R-configuration for a counterclockwise arrangement of priorities

D) It depends on the priorities of the substituents

Answer: D) It depends on the priorities of the substituents.

Unit -4

1. What is the characteristic of liquids that allows them to flow?

A) Viscosity

B) Surface tension

C) Fluidity

D) Rigidity

Answer: C) Fluidity

2. Which of the following properties of liquids is responsible for their ability to resist flow?

A) Viscosity

B) Surface tension

C) Density

D) Boiling point

Answer: A) Viscosity

3. What is the term for the force that acts on the surface of a liquid, causing it to behave like an elastic sheet?

A) Surface tension

B) Viscosity

C) Adhesion

D) Cohesion

Answer: A) Surface tension

4. Which of the following factors affects the viscosity of a liquid?

A) Temperature

B) Pressure

C) Surface area

D) Volume

Answer: A) Temperature

5. What is the term for the phenomenon where a liquid rises in a narrow tube without the need for pressure?

A) Capillary action

B) Surface tension

C) Viscosity

D) Diffusion

Answer: A) Capillary action

6. Which of the following properties of liquids is responsible for their ability to wet surfaces?

A) Adhesion

B) Cohesion

C) Surface tension

D) Viscosity

Answer: A) Adhesion

7. What is the term for the temperature at which a liquid changes state to become a gas?

A) Boiling point

B) Melting point

C) Freezing point

D) Critical point

Answer: A) Boiling point

8. Which of the following factors affects the boiling point of a liquid?

A) Pressure

B) Temperature

C) Volume

D) Surface area

Answer: A) Pressure

9. What is the term for the amount of heat energy required to change the state of a liquid to a gas?

A) Latent heat of vaporization

B) Specific heat capacity

C) Heat of fusion

D) Thermal conductivity

Answer: A) Latent heat of vaporization

10. Which of the following properties of liquids is responsible for their ability to conduct heat?

A) Thermal conductivity

B) Specific heat capacity

C) Latent heat of vaporization

D) Viscosity

Answer: A) Thermal conductivity

11. What is the term for the study of the behavior of liquids in motion?

A) Fluid dynamics

B) Hydrostatics

C) Thermodynamics

D) Kinetics

Answer: A) Fluid dynamics

12. Which of the following types of intermolecular forces is responsible for the surface tension of liquids?

A) Hydrogen bonding

B) Dipole-dipole interactions

C) London dispersion forces

D) All of the above

Answer: D) All of the above

13. What is the term for the pressure exerted by a liquid at equilibrium at any point of the liquid due to the force of gravity?

A) Hydrostatic pressure

B) Atmospheric pressure

C) Vapor pressure

D) Surface tension

Answer: A) Hydrostatic pressure

14. Which of the following factors affects the vapor pressure of a liquid?

A) Temperature

B) Pressure

C) Volume

D) Surface area

Answer: A) Temperature

15. What is the term for the temperature at which the vapor pressure of a liquid equals the surrounding pressure?

A) Boiling point

B) Melting point

C) Freezing point

D) Critical point

Answer: A) Boiling point

16. Which of the following properties of liquids is responsible for their ability to dissolve substances?

A) Solubility

B) Viscosity

C) Surface tension

D) Density

Answer: A) Solubility

17. What is the term for the maximum amount of a substance that can dissolve in a given amount of liquid at a particular temperature?

A) Solubility

B) Solute

C) Solvent

D) Solution

Answer: A) Solubility

18. Which of the following factors affects the solubility of a substance in a liquid?

A) Temperature

B) Pressure

C) Surface area

D) All of the above

Answer: D) All of the above

19. What is the term for the process of a liquid changing state to become a solid?

A) Freezing

B) Melting

C) Boiling

D) Condensation

Answer: A) Freezing

20. Which of the following properties of liquids is responsible for their ability to maintain their shape against external forces?

A) Viscosity

B) Surface tension

C) Density

D) Rigidity

Answer: B) Surface tension

Here are the remaining questions:

Questions 21-30

21. What is the term for the ratio of the density of a liquid to the density of water?

A) Specific gravity

B) Density

C) Viscosity

D) Surface tension

Answer: A) Specific gravity

22. Which of the following liquids has a high specific gravity?

A) Water

B) Mercury

C) Ethanol

D) Gasoline

Answer: B) Mercury

23. What is the term for the ability of a liquid to dissolve gases?

A) Solubility

B) Absorption

C) Adsorption

D) Desorption

Answer: A) Solubility

24. Which of the following factors affects the solubility of gases in liquids?

A) Temperature

B) Pressure

C) Surface area

D) All of the above

Answer: D) All of the above

25. What is the term for the process of removing impurities from a liquid by heating and then cooling it?

A) Distillation

B) Crystallization

C) Filtration

D) Decantation

Answer: A) Distillation

26. Which of the following types of distillation is used to separate mixtures of liquids with different boiling points?

A) Simple distillation

B) Fractional distillation

C) Steam distillation

D) Vacuum distillation

Answer: B) Fractional distillation

27. What is the term for the temperature at which a liquid's vapor pressure equals the atmospheric pressure?

A) Boiling point

B) Melting point

C) Freezing point

D) Critical point

Answer: A) Boiling point

28. Which of the following properties of liquids is responsible for their ability to flow easily?

A) Viscosity

B) Surface tension

C) Density

D) Fluidity

Answer: D) Fluidity

29. What is the term for the phenomenon where a liquid's surface behaves like an elastic sheet?

A) Surface tension

B) Viscosity

C) Adhesion

D) Cohesion

Answer: A) Surface tension

30. Which of the following is an example of a liquid with high surface tension?

A) Water

B) Ethanol

C) Gasoline

D) Mercury

Answer: A) Water

Unit-5

1. Which group of elements in the periodic table is known as the s-block elements?

A) Group 1 and 2

B) Group 13 to 18

C) Group 3 to 12

D) Group 17 and 18

Answer: A) Group 1 and 2

2. Which of the following elements is an s-block element?

A) Lithium (Li)

B) Carbon ©

C) Nitrogen (N)

D) Oxygen (O)

Answer: A) Lithium (Li)

3. What is the general electronic configuration of s-block elements?

A) ns1-2

B) ns2 np1-6

C) ns2 (n-1)d1-10

D) ns2 (n-1)f1-14

Answer: A) ns1-2

4. Which of the following properties is characteristic of s-block elements?

A) High ionization energy

B) High electronegativity

C) Low ionization energy

D) High melting points

Answer: C) Low ionization energy

5. Which of the following s-block elements is highly reactive?

A) Sodium (Na)

B) Magnesium (Mg)

C) Calcium (Ca)

D) All of the above

Answer: D) All of the above

6. What is the trend in atomic radius for s-block elements down a group?

A) Decreases

B) Increases

C) Remains the same

D) First increases then decreases

Answer: B) Increases

7. Which of the following s-block elements has the highest reactivity?

A) Lithium (Li)

B) Sodium (Na)

C) Potassium (K)

D) Rubidium (Rb)

Answer: D) Rubidium (Rb)

8. What is the common oxidation state of s-block elements?

A) +1 and +2

B) +3 and +4

C) +5 and +6

D) +7 and +8

Answer: A) +1 and +2

9. Which of the following compounds is formed by the reaction of s-block elements with water?

A) Oxides

B) Hydroxides

C) Carbonates

D) Nitrates

Answer: B) Hydroxides

10. Which of the following s-block elements is used in batteries?

A) Lithium (Li)

B) Sodium (Na)

C) Potassium (K)

D) Calcium (Ca)

Answer: A) Lithium (Li)

11. Which of the following s-block elements is used in the manufacture of soap?

A) Sodium (Na)

B) Potassium (K)

C) Calcium (Ca)

D) Magnesium (Mg)

Answer: A) Sodium (Na)

12. What is the name of the process used to extract s-block elements from their ores?

A) Electrolysis

B) Reduction

C) Oxidation

D) Hydrolysis

Answer: A) Electrolysis

13. Which of the following s-block elements is used in the treatment of manic depression?

A) Lithium (Li)

B) Sodium (Na)

C) Potassium (K)

D) Calcium (Ca)

Answer: A) Lithium (Li)

14. What is the trend in reactivity for s-block elements down a group?

A) Decreases

B) Increases

C) Remains the same

D) First increases then decreases

Answer: B) Increases

15. Which of the following s-block elements has the lowest ionization energy?

A) Lithium (Li)

B) Sodium (Na)

C) Potassium (K)

D) Rubidium (Rb)

Answer: D) Rubidium (Rb)

16. What is the common name for Group 1 s-block elements?

A) Alkali metals

B) Alkaline earth metals

C) Noble gases

D) Halogens

Answer: A) Alkali metals

17. Which of the following s-block elements is used in fireworks?

A) Sodium (Na)

B) Potassium (K)

C) Calcium (Ca)

D) Strontium (Sr)

Answer: D) Strontium (Sr)

18. What is the trend in electronegativity for s-block elements down a group?

A) Increases

B) Decreases

C) Remains the same

D) First increases then decreases

Answer: B) Decreases

19. Which of the following s-block elements is used in the manufacture of cement?

A) Calcium (Ca)

B) Magnesium (Mg)

C) Sodium (Na)

D) Potassium (K)

Answer: A) Calcium (Ca)

20. Which of the following s-block elements has the highest melting point?

A) Lithium (Li)

B) Sodium (Na)

C) Potassium (K)

D) Beryllium (Be)

Answer: D) Beryllium

21. Which of the following s-block elements is used in the production of paper?

A) Sodium (Na)

B) Potassium (K)

C) Calcium (Ca)

D) Magnesium (Mg)

Answer: A) Sodium (Na)

22. What is the role of s-block elements in biological systems?

A) They are essential for plant growth

B) They are essential for animal health

C) They are used in medicine

D) All of the above

Answer: D) All of the above

23. Which of the following s-block elements is used in the manufacture of glass?

A) Sodium (Na)

B) Potassium (K)

C) Calcium (Ca)

D) Magnesium (Mg)

Answer: A) Sodium (Na)

24. What is the trend in reactivity for s-block elements across a period?

A) Increases

B) Decreases

C) Remains the same

D) First increases then decreases

Answer: B) Decreases

25. Which of the following s-block elements is used in the production of soap and detergents?

A) Sodium (Na)

B) Potassium (K)

C) Calcium (Ca)

D) Magnesium (Mg)

Answer: A) Sodium (Na)

26. What is the common name for Group 2 s-block elements?

A) Alkali metals

B) Alkaline earth metals

C) Noble gases

D) Halogens

Answer: B) Alkaline earth metals

27. Which of the following s-block elements is used in the manufacture of fireworks to produce a red color?

A) Strontium (Sr)

B) Barium (Ba)

C) Calcium (Ca)

D) Magnesium (Mg)

Answer: A) Strontium (Sr)

28. What is the role of calcium in the human body?

A) It is essential for bone health

B) It is essential for muscle function

C) It is essential for nerve function

D) All of the above

Answer: D) All of the above

29. Which of the following s-block elements is used in the production of alloys?

A) Lithium (Li)

B) Sodium (Na)

C) Magnesium (Mg)

D) All of the above

Answer: D) All of the above

30. What is the significance of s-block elements in industry?

A) They are used in the manufacture of various products

B) They are used in medicine

C) They are essential for plant growth

D) All of the above

Answer: D) All of the above

Unit-6

1. What is the term for the study of the structure and properties of solids?

A) Solid-state physics

B) Materials science

C) Crystallography

D) All of the above

Answer: D) All of the above

2. Which of the following types of solids has a regular arrangement of atoms?

A) Crystalline solids

B) Amorphous solids

C) Glassy solids

D) Polymeric solids

Answer: A) Crystalline solids

3. What is the term for the repeating pattern of atoms in a crystalline solid?

A) Unit cell

B) Crystal lattice

C) Amorphous structure

D) None of the above

Answer: B) Crystal lattice

4. Which of the following properties is characteristic of crystalline solids?

A) Sharp melting point

B) High thermal conductivity

C) Anisotropy

D) All of the above

Answer: D) All of the above

5. What is the term for the ability of a solid to conduct heat?

A) Thermal conductivity

B) Electrical conductivity

C) Optical conductivity

D) None of the above

Answer: A) Thermal conductivity

6. Which of the following types of solids is isotropic?

A) Crystalline solids

B) Amorphous solids

C) Glassy solids

D) Both B and C

Answer: D) Both B and C

7. What is the term for the arrangement of atoms in a solid that lacks long-range order?

A) Amorphous structure

B) Crystalline structure

C) Glassy structure

D) None of the above

Answer: A) Amorphous structure

8. Which of the following properties is characteristic of amorphous solids?

A) Gradual softening

B) Lack of sharp melting point

C) Isotropy

D) All of the above

Answer: D) All of the above

9. What is the term for the study of the arrangement of atoms in solids?

A) Crystallography

B) Materials science

C) Solid-state physics

D) None of the above

Answer: A) Crystallography

10. Which of the following techniques is used to determine the structure of crystalline solids?

A) X-ray diffraction

B) Electron diffraction

C) Neutron diffraction

D) All of the above

Answer: D) All of the above

11. What is the term for the smallest repeating unit of a crystal lattice?

A) Unit cell

B) Crystal lattice

C) Amorphous structure

D) None of the above

Answer: A) Unit cell

12. Which of the following types of solids has a high degree of order?

A) Crystalline solids

B) Amorphous solids

C) Glassy solids

D) Polymeric solids

Answer: A) Crystalline solids

13. What is the term for the phenomenon where a solid changes directly to a gas?

A) Sublimation

B) Melting

C) Boiling

D) None of the above

Answer: A) Sublimation

14. Which of the following solids is an example of a crystalline solid?

A) Glass

B) Rubber

C) Salt

D) Plastic

Answer: C) Salt

15. What is the term for the study of the properties of solids at very low temperatures?

A) Cryogenics

B) Solid-state physics

C) Materials science

D) None of the above

Answer: A) Cryogenics

16. Which of the following properties is characteristic of solids?

A) Rigidity

B) Fluidity

C) Compressibility

D) None of the above

Answer: A) Rigidity

17. What is the term for the arrangement of atoms in a solid that exhibits long-range order?

A) Crystalline structure

B) Amorphous structure

C) Glassy structure

D) None of the above

Answer: A) Crystalline structure

18. Which of the following types of solids is used in the manufacture of semiconductors?

A) Crystalline solids

B) Amorphous solids

C) Glassy solids

D) Polymeric solids

Answer: A) Crystalline solids

19. What is the term for the phenomenon where a solid absorbs moisture from the atmosphere?

A) Hygroscopy

B) Deliquescence

C) Efflorescence

D) None of the above

Answer: A) Hygroscopy

20. Which of the following solids is an example of an amorphous solid?

A) Salt

B) Glass

C) Diamond

D) Graphite

Answer: B) Glass

21. What is the term for the study of the structure and properties of materials?

A) Materials science

B) Solid-state physics

C) Crystallography

D) None of the above

Answer: A) Materials science

22. Which of the following types of solids is characterized by a random arrangement of atoms?

A) Crystalline solids

B) Amorphous solids

C) Glassy solids

D) Both B and C

Answer: D) Both B and C

23. What is the term for the ability of a solid to withstand stress without deforming?

A) Hardness

B) Toughness

C) Strength

D) None of the above

Answer: C) Strength

24. Which of the following solids is an example of a crystalline solid with a face-centered cubic structure?

A) Sodium chloride (NaCl)

B) Copper (Cu)

C) Diamond ©

D) Graphite ©

Answer: B) Copper (Cu)

25. What is the term for the phenomenon where a solid changes its crystal structure in response to changes in temperature or pressure?

A) Phase transition

B) Melting

C) Boiling

D) None of the above

Answer: A) Phase transition

26. Which of the following properties is characteristic of crystalline solids?

A) Anisotropy

B) Isotropy

C) High thermal conductivity

D) Both A and C

Answer: D) Both A and C

27. What is the term for the study of the relationship between the structure and properties of materials?

A) Materials science

B) Solid-state physics

C) Crystallography

D) None of the above

Answer: A) Materials science

28. Which of the following types of solids is used in the manufacture of ceramics?

A) Crystalline solids

B) Amorphous solids

C) Glassy solids

D) Polymeric solids

Answer: A) Crystalline solids

29. What is the term for the phenomenon where a solid absorbs light and emits light at a different wavelength?

A) Fluorescence

B) Phosphorescence

C) Luminescence

D) None of the above

Answer: C) Luminescence

30. Which of the following solids is an example of a crystalline solid with a body-centered cubic structure?

A) Iron (Fe)

B) Copper (Cu)

C) Sodium chloride (NaCl)

D) Diamond ©

Answer: A) Iron (Fe)

Unit-7

1. Which group of elements in the periodic table is known as the p-block elements?

A) Group 1 and 2

B) Group 13 to 18

C) Group 3 to 12

D) Group 17 and 18

Answer: B) Group 13 to 18

2. Which of the following elements is a p-block element?

A) Carbon ©

B) Nitrogen (N)

C) Oxygen (O)

D) All of the above

Answer: D) All of the above

3. What is the general electronic configuration of p-block elements?

A) ns1-2

B) ns2 np1-6

C) ns2 (n-1)d1-10

D) ns2 (n-1)f1-14

Answer: B) ns2 np1-6

4. Which of the following properties is characteristic of p-block elements?

A) High ionization energy

B) High electronegativity

C) Variable oxidation states

D) All of the above

Answer: D) All of the above

5. Which of the following p-block elements is a metalloid?

A) Boron (B)

B) Carbon ©

C) Nitrogen (N)

D) Oxygen (O)

Answer: A) Boron (B)

6. What is the trend in electronegativity for p-block elements across a period?

A) Increases

B) Decreases

C) Remains the same

D) First increases then decreases

Answer: A) Increases

7. Which of the following p-block elements is a noble gas?

A) Neon (Ne)

B) Argon (Ar)

C) Krypton (Kr)

D) All of the above

Answer: D) All of the above

8. What is the common oxidation state of group 14 p-block elements?

A) +2 and +4

B) +3 and +5

C) +1 and +3

D) +5 and +7

Answer: A) +2 and +4

9. Which of the following p-block elements is used in the manufacture of semiconductors?

A) Silicon (Si)

B) Germanium (Ge)

C) Both A and B

D) None of the above

Answer: C) Both A and B

10. What is the term for the ability of p-block elements to form multiple bonds?

A) Catenation

B) Multiple bonding

C) Hybridization

D) None of the above

Answer: B) Multiple bonding

11. Which of the following p-block elements is used in the manufacture of fertilizers?

A) Nitrogen (N)

B) Phosphorus (P)

C) Potassium (K)

D) All of the above

Answer: D) All of the above

12. What is the trend in atomic radius for p-block elements down a group?

A) Decreases

B) Increases

C) Remains the same

D) First increases then decreases

Answer: B) Increases

13. Which of the following p-block elements is a halogen?

A) Fluorine (F)

B) Chlorine (Cl)

C) Bromine (Br)

D) All of the above

Answer: D) All of the above

14. What is the common oxidation state of group 17 p-block elements?

A) -1

B) +1

C) +3

D) +5

Answer: A) -1

15. Which of the following p-block elements is used in the manufacture of glass?

A) Silicon (Si)

B) Oxygen (O)

C) Sodium (Na)

D) Calcium (Ca)

Answer: A) Silicon (Si)

16. What is the term for the ability of carbon to form long chains and rings?

A) Catenation

B) Multiple bonding

C) Hybridization

D) None of the above

Answer: A) Catenation

17. Which of the following p-block elements is used in the manufacture of matches?

A) Phosphorus (P)

B) Sulfur (S)

C) Chlorine (Cl)

D) Bromine (Br)

Answer: A) Phosphorus (P)

18. What is the trend in reactivity for p-block elements across a period?

A) Increases

B) Decreases

C) Remains the same

D) First increases then decreases

Answer: B) Decreases

19. Which of the following p-block elements is used in the manufacture of pesticides?

A) Phosphorus (P)

B) Sulfur (S)

C) Chlorine (Cl)

D) All of the above

Answer: D) All of the above

20. What is the common oxidation state of group 16 p-block elements?

A) -2

B) +2

C) +4

D) +6

Answer: A) -2

21. Which of the following p-block elements is used in the manufacture of LED lights?

A) Gallium (Ga)

B) Arsenic (As)

C) Phosphorus (P)

D) All of the above

Answer: D) All of the above

22. What is the term for the process of adding impurities to a semiconductor material?

A) Doping

B) Diffusion

C) Ion implantation

D) None of the above

Answer: A) Doping

23. Which of the following p-block elements is used in the manufacture of water treatment chemicals?

A) Chlorine (Cl)

B) Aluminum (Al)

C) Iron (Fe)

D) Copper (Cu)

Answer: A) Chlorine (Cl)

24. What is the common oxidation state of group 15 p-block elements?

A) -3

B) +3

C) +5

D) Both B and C

Answer: D) Both B and C

25. Which of the following p-block elements is used in the manufacture of pharmaceuticals?

A) Carbon ©

B) Nitrogen (N)

C) Oxygen (O)

D) All of the above

Answer: D) All of the above

27. What is the term for the ability of p-block elements to form π bonds?

A) Multiple bonding

B) Hybridization

C) Resonance

D) None of the above

Answer: A) Multiple bonding

28. Which of the following p-block elements is used in the manufacture of pesticides and fertilizers?

A) Phosphorus (P)

B) Nitrogen (N)

C) Potassium (K)

D) All of the above

Answer: D) All of the above

29. What is the common oxidation state of group 14 p-block elements in their oxides?

A) +2 and +4

B) +3 and +5

C) +1 and +3

D) +5 and +7

Answer: A) +2 and +4

30. Which of the following p-block elements is used in the manufacture of semiconductors and computer chips?

A) Silicon (Si)

B) Germanium (Ge)

C) Gallium (Ga)

D) All of the above

Answer: D) All of the above