CHAPTER 1

BASIC CONCEPTS

MULTIPLE CHOICE QUESTIONS

1. The mass of one mole of electron is:

(a) 1.008 mg **(b)** 0.184 mg

(c) 0.54 mg **(d)** 0.054 mg

2. 27 g of Al will react with how much mass of O_2 to produce Al_2O_3:

(a) 8 g of oxygen **(b)** 16 g of oxygen

(c) 32 g of oxygen **(d)** 24 g of oxygen

3. The number of moles of NO_2 which contains 16 g of oxygen:

(a) 0.25 **(b)** 0.50

(c) 1.0 **(d)** 1.50

4. The volume occupied by 2.0 g of Ne at STP:

(a) 2.24 dm^3 **(b)** 22.4 dm^3

(c) 1.12 dm^3 **(d)** 112 cm^3

5. A sample in the ionization chamber of mass spectrometer is ionized by:

(a) Electrons **(b)** Proton

(c) Neutron **(d)** Nucleus

6. Which one of the following pair is not iso-electronic:

(a) CO, N_2 **(b)** Na^+, Ne

(c) Ca, Ar **(d)** K^+, Ar

7. Which one of the following is not a molecular ion:

(a) N_2^+ **(b)** CH_4^+

(c) $C_6H_8^+$ **(d)** NH_4^+

8. 180 g of glucose contains number of hydrogen atoms:

(a) 3.6×10^{23} **(b)** 6.0×10^{23}

(c) 7.2×10^{23} **(d)** 7.2×10^{24}

9. Who first of all determined atomic masses of elements:

(a) J. Berzelius **(b)** J.J. Thomson

(c) Johon Dalton **(d)** Democritus

10. The mass of H-atom is 1.008 a.m.u. Its mass in kg should be ————:

(a) $1.008 \times 1.661 \times 10^{-23}$ kg **(b)** $\frac{1.008}{1.661 \times 10^{-27}}$ kg

(c) $1.008 \times 1.661 \times 10^{-27}$ kg **(d)** 1.661×10^{-27} kg

11. The atomicity of one molecule of Haemoglobin is:

(a) 10,000 **(b)** 68,000

(c) 17,000 **(d)** 100,000

12. Formation of uninegative ion is:

(a) Exothermic **(b)** Endothermic

(c) Both (a) & (b) **(d)** None of these

13. Which of the following elements has nine isotopes:

(a) Ca **(b)** Pd

(c) Cd **(d)** Sn

14. Which of the following will form single peak in mass spectrograph:

(a) Iodine **(b)** Arsenic

(c) Fluorine **(d)** All of these

15. Which one of the following contains maximum no. of molecules:

(a) 16.0 g of CH_4 **(b)** 16.0 g of O_2

(c) 16.0 g of SO_2 **(d)** 16.0 g of H_2O

16. Atoms of all the elements always contain in nucleus:

(a) Proton **(b)** Proton and neutron

(c) Neutron **(d)** Electron and neutron

17. Actual yield of a chemical reaction is always less than theoretical yield because:

(a) Side reactions **(b)** Wastage of products

(c) Reversible reactions **(d)** All of these

18. Mass of sodium in 53 g of Na_2CO_3 is:

(a) 23 g **(b)** 46 g

(c) 92 g **(d)** 106 g

19. 20 moles each of Mg and O_2 react to form MgO. The amount of MgO formed would be:

(a) 20 g **(b)** 400 g

(c) 800 g **(d)** 1600 g

20. The number of peaks obtained in mass spectrometry shows:

(a) Charge on isotope **(b)** Mass of isotope

(c) Number of isotopes **(d)** Relative abundance of isotopes

21. Molecular mass of water (18 g) means:

(a) Mole **(b)** Gram mole

(c) Gram molecule **(d)** All of these

22. Which of the following ion formation is always exothermic:

(a) Uninegative **(b)** Unipositive

(c) Dinegative **(d)** Dipositive

23. The number of isotopes of elements with even mass number and even atomic number are:

(a) 280 **(b)** 300

(c) 154 **(d)** 54

24. Which one of the following is not the mono isotopic element:

(a) Arsenic **(b)** Uranium

(c) Iodine **(d)** Gold

25. Percentage of oxygen in calcium carbonate is:

(a) 40% **(b)** 48%

(c) 12% **(d)** 16%

26. Which one of the following substances is used as CO_2 absorber in combustion analysis:

(a) $Mg(ClO_4)_2$ **(b)** 50% KOH

(c) Lime water **(d)** Dilute NaOH

27. Which one of the following properties is always in whole number:

(a) Atomic mass **(b)** Atomic radius

(c) Atomic volume **(d)** Atomic number

28. What is the mass of one mole of Iodine:

(a) 53 g **(b)** 74 g

(c) 127 g **(d)** 254 g

29. 0.5 moles of H_2SO_4 contains "X" moles of oxygen atoms "X" is:

(a) 0.5 **(b)** 1.0

(c) 2.0 **(d)** 4.0

30. What will weigh more:

(a) 2 mole N_2 **(b)** 1 mole O_3

(c) 2 mole O_2 **(d)** 2 mole CO_2

31. The number of electrons in one mole of H_2 is:

(a) 6.02×10^{23} **(b)** 3.01×10^{23}

(c) 12.04×10^{23} **(d)** Indefinite

32. CO^+ is an example of:

(a) Free radical **(b)** Cationic molecular ion

(c) Anionic molecular ion **(d)** Stable molecule

33. Relative atomic mass is the mass of an atom of an element as compared to the mass of one atom of:

(a) Oxygen **(b)** Hydrogen

(c) Nitrogen **(d)** Carbon

34. Percentage of oxygen in H_2O is:

(a) 80% **(b)** 88.8%

(c) 8.8% **(d)** 9.8%

35. Large no of isotopes are known for the elements whose masses are multiple of:

(a) Two **(b)** Four

(c) Six **(d)** Eight

36. The least no of molecules is present in 30 g of:

(a) N_2O **(b)** NO

(c) NO_2 **(d)** N_2O_3

37. How many atoms of carbon are present in 18 g of glucose $C_6H_{12}O_6$:

(a) 6.02×10^{22} **(b)** 3.6×10^{23}

(c) 6.0×10^{23} **(d)** 3.6×10^{24}

38. The relative atomic mass of oxygen according to C –12.000 a.m.u standard is:

(a) Less than 16 **(b)** More than 16

(c) 16 only **(d)** No relationship

39. An organic compound contains 2% of sulphur. The molar mass of compound is:

(a) 200 **(b)** 800

(c) 1600 **(d)** 3200

40. The mass of 0.5 mole of Aluminium is:

(a) 13 g **(b)** 13.5 g

(c) 14 g **(d)** 27 g

answers

1.	(c)	**2.**	(d)	**3.**	(b)	**4.**	(a)	**5.**	(a)
6.	(c)	**7.**	(d)	**8.**	(d)	**9.**	(a)	**10.**	(c)
11.	(a)	**12.**	(a)	**13.**	(c)	**14.**	(d)	**15.**	(a)
16.	(a)	**17.**	(d)	**18.**	(a)	**19.**	(c)	**20.**	(c)
21.	(d)	**22.**	(a)	**23.**	(c)	**24.**	(b)	**25.**	(b)
26.	(b)	**27.**	(d)	**28.**	(d)	**29.**	(c)	**30.**	(d)
31.	(c)	**32.**	(b)	**33.**	(d)	**34.**	(b)	**35.**	(b)
36.	(d)	**37.**	(b)	**38.**	(a)	**39.**	(c)	**40.**	(b)

CHAPTER 2

EXPERIMENTAL TECHNIQUES IN CHEMISTRY

MULTIPLE CHOICE QUESTIONS

1. Fluted filter paper is used to:

(a) Filter hot solution **(b)** Decrease the area

(c) Avoid premature crystallization **(d)** Speed up filtration

2. Safe and most reliable method of drying crystals is through:

(a) Filter paper **(b)** Desicator

(c) Oven **(d)** None

3. A process controlled by distribution law:

(a) Crystallization **(b)** Sublimation

(c) Solvent extraction **(d)** Filtration

4. The technique used to separate insoluble particles from liquid is:

(a) Crystallization **(b)** Sublimation

(c) Filtration **(d)** Solvent extraction

5. The solid which is left over the filter paper is called:

(a) Filtrate **(b)** Residue

(c) Crystals **(d)** Mud

6. The solution left behind after the separation of crystals is called:

(a) Residue **(b)** Mud

(c) Crystals **(d)** Mother liquor

7. Size of filter paper is selected according to the amount of:

(a) Solution (b) Precipitates
(c) Water (d) Solid particles

8. **Gooch crucibles are made up of:**
(a) Plastic (b) Glass
(c) Porcelain (d) Steel

9. **Sintered crucible is made up of:**
(a) Plastic (b) Glass
(c) Porcelain (d) Steel

10. **Which of the following can't be filtered by sintered glass crucible:**
(a) $KMnO_4$ solution (b) Concentrated HCl
(c) Concentrated HF (d) AgCl precipitates

11. **Tip of funnel should be along the side of breaker to avoid:**
(a) Leakage (b) Splashing
(c) Sampling (d) All of above

12. **Mixture of NaCl and NH_4Cl can be separated by:**
(a) Filtration (b) Crystallization
(c) Sublimation (d) Solvent extraction

13. **Cold finger is used for effective:**
(a) Filtration (b) Crystallization
(c) Sublimation (d) Chromatography

14. **Pb^{2+} in paper chromatography are located by using:**
(a) Rubeanic acid (b) Carbon disulphide
(c) Ninhydrin (d) Hydrogen sulphide

15. **Crystallization does not involve:**
(a) Heating (b) Sublimation
(c) Cooling (d) Vaporization

16. **In CCl_4 solvent, I_2 show ———— colour:**
(a) Red (b) Purple

(c) Blue **(d)** Yellow

17. In adsorption chromatography alumina and silica gel are used as:

(a) Mobile phase **(b)** Stationary phase

(c) Mixed phase **(d)** Single phase

18. The solvent or mixture of solvent used for separation of compounds is called:

(a) Mobile phase **(b)** Stationary phase

(c) Mixed phase **(d)** Static phase

19. The separation of two miscible liquid by heating due to difference of their boiling points is called:

(a) Vaporization **(b)** Condensation

(c) Distillation **(d)** Sublimation

20. The component which shows maximum affinity for stationary phase will have:

(a) Large R_f value **(b)** Small R_f value

(c) Intermediate R_f value **(d)** None of above

answers

1.	(d)	**2.**	(b)	**3.**	(c)	**4.**	(c)	**5.**	(b)
6.	(d)	**7.**	(b)	**8.**	(c)	**9.**	(b)	**10.**	(c)
11.	(b)	**12.**	(c)	**13.**	(c)	**14.**	(d)	**15.**	(b)
16.	(b)	**17.**	(b)	**18.**	(a)	**19.**	(c)	**20.**	(b)

CHAPTER 3

GASES

MULTIPLE CHOICE QUESTIONS

1. Lind's method is employed for:

(a) Separation of gases **(b)** Expansion of gases
(c) Compression of gases **(d)** Liquification of gases

2. What will be the pressure of 1 mole of an ideal gas maintained at 300 K and 250 cm^3 volume:

(a) 98.5 atm **(b)** 96.7 atm
(c) 95.8 atm **(d)** 97.1 atm

3. Hydrogen diffuses four times more rapidly than volume of an unknown gas, molar mass of unknown gas should be:

(a) 16 $g\text{-}mol^{-1}$ **(b)** 32 $g\text{-}mol^{-1}$
(c) 48 $g\text{-}mol^{-1}$ **(d)** 64 $g\text{-}mol^{-1}$

4. The highest temperature at which a substance can exist as a liquid is called its:

(a) Critical temperature **(b)** Transition temperature
(c) Absolute temperature **(d)** Standard temperature

5. The expression for root mean square velocity is:

(a) $C_{rms} = \left(\frac{3RT}{M}\right)^{1/2}$ **(b)** $C_{rms} = \left(\frac{3PV}{M}\right)^{1/2}$

(c) $C_{rms} = \left(\frac{3P}{d}\right)^{1/2}$ **(d)** All are correct

6. The kinetic molecular theory of gases was put forward in 1738 by:

(a) Boltzman **(b)** Maxwell
(c) Clausius **(d)** Bernouli

7. The spreading of fragrance in air is due to:

(a) Diffusion **(b)** Effusion
(c) Density **(d)** Compression

8. The partial pressure of oxygen in air is:

(a) 760 torr **(b)** 323 torr
(c) 159 torr **(d)** 116 torr

9. What is the simplest form of matter:

(a) Solid **(b)** Liquid
(c) Gas **(d)** Plasma

10. The equation $V_T = V_o\left(1 + \frac{t}{273}\right)$ is based on:

(a) Farenheight scale **(b)** Celsius scale
(c) Kelvin scale **(d)** None of these

11. Critical temperature of a gas depends upon:

(a) Size of molecule **(b)** Shape of molecule
(c) Intermolecular forces **(d)** All of these

12. The diffusion of gases at absolute zero will be:

(a) Unchanged **(b)** Slightly decreased
(c) Slightly increased **(d)** Zero

13. At constant temperature the pressure of an ideal gas is doubled, its density becomes:

(a) Half **(b)** Double
(c) Same **(d)** None

14. The densities of gases are expressed in:

(a) $kg\text{-}m^{-3}$ **(b)** $g\text{-}cm^{-3}$
(c) $g\text{-}dm^{-3}$ **(d)** All of these

15. 0.5 mole of NO_2 and 0.5 mole of SO_3 gas have equal:

(a) Volume **(b)** Molecules
(c) Mass **(d)** Atoms

16. Which one has the lowest density at room temperature:

(a) Ne **(b)** N_2
(c) NH_3 **(d)** CO

17. Which of these gases diffuse more quickly than oxygen:

(a) H_2S **(b)** NO
(c) Cl_2 **(d)** N_2O

18. Which of the following is not an intermolecular force between molecules:

(a) Covalent bonds **(b)** Hydrogen bond
(c) Debye forces **(d)** Ion-dipole force

19. The weakest intermolecular force is:

(a) Hydrogen bonding **(b)** Debye force

(c) London force **(d)** Ion-dipole force

20. Under what conditions real gases deviate from ideal behaviour:

(a) High temperature **(b)** Low temperature

(c) High pressure **(d)** Both (b) and (c)

21. Equal masses of methane and oxygen are mixed in an empty container at 25°C. The fraction of total pressure exerted by oxygen is:

(a) $\frac{1}{3}$ **(b)** $\frac{8}{9}$

(c) $\frac{1}{9}$ **(d)** $\frac{16}{17}$

22. The molar volume of CO_2 is maximum at:

(a) STP **(b)** 127°C and 1 atm

(c) 0°C and 2 atm **(d)** 273°C and 2 atm

23. Which of the following gases diffuse more rapidly:

(a) Cl_2 **(b)** CO_2

(c) CH_4 **(d)** N_2

24. For a gas obeying Boyle's law if pressure is doubled the volume becomes:

(a) Double **(b)** One half

(c) One forth **(d)** Remains constant

25. According to Graham's law, the rate of diffusion of H_2 and O_2 gases has the ratio:

(a) 1 : 4 **(b)** $1 : \sqrt{4}$

(c) 4 : 1 **(d)** 3 : 32

26. Boyle's law is represented as:

(a) $V \propto T$ **(b)** $V \propto P$

(c) $V \propto \frac{1}{P}$ **(d)** $P \propto \frac{1}{T}$

27. Absolute zero is equal to:

(a) –273.15 K **(b)** –273.15°C

(c) 273.15°C **(d)** –237.15°C

28. Which one of the following gases is more ideal at STP:

(a) SO_2 **(b)** NH_3

(c) H_2 **(d)** H_2S

29. Which gas deviate more from ideal behaviour at high pressure:

(a) H_2 **(b)** He

(c) Ar **(d)** NH_3

30. Eight grams each of O_2 and H_2 at 27°C will have total K.E in the ratio:

(a) 1 : 1 **(b)** 16 : 1

(c) 8 : 1 **(d)** 1 : 16

31. Which pair of gases do not obey Dalton's law of partial pressure:

(a) H_2 and O_2 **(b)** N_2 and O_2

(c) NH_3 and HCl **(d)** H_2 and He

32. Which gas cannot be dried by passing over H_2SO_4:

(a) SO_2 **(b)** H_2

(c) NO_2 **(d)** H_2S

33. One dm^3 of H_2 at STP contains number of molecules:

(a) 6.022×10^{23} **(b)** 6.022×10^{22}

(c) 2.68×10^{22} **(d)** 3.01×10^{23}

34. Which one of the following has least critical temperature:

(a) O_2 **(b)** NH_3

(c) H_2O **(d)** HCl

35. Which one of the following molecules have maximum root mean square velocity at 25°C:

(a) CO_2 **(b)** H_2S

(c) NH_3 **(d)** CO_2

answers

1.	(d)	**2.**	(a)	**3.**	(b)	**4.**	(a)	**5.**	(d)
6.	(d)	**7.**	(a)	**8.**	(c)	**9.**	(c)	**10.**	(b)
11.	(d)	**12.**	(d)	**13.**	(b)	**14.**	(c)	**15.**	(b)
16.	(c)	**17.**	(b)	**18.**	(a)	**19.**	(c)	**20.**	(d)
21.	(a)	**22.**	(b)	**23.**	(c)	**24.**	(b)	**25.**	(c)
26.	(c)	**27.**	(b)	**28.**	(c)	**29.**	(d)	**30.**	(d)
31.	(c)	**32.**	(d)	**33.**	(c)	**34.**	(a)	**35.**	(c)

CHAPTER 4

LIQUIDS AND SOLIDS

MULTIPLE CHOICE QUESTIONS

1. Which one of the following is psuedo solid:
(a) CaF_2 **(b)** Glass
(c) NaCl **(d)** All

2. In liquids, intermolecular forces are:
(a) Very weak **(b)** Very strong
(c) Negligible **(d)** Reasonably strong

3. Which one is false for evaporation:
(a) Surface phenomenon **(b)** Continuous
(c) Exothermic **(d)** Cause cooling

4. Vapour pressure of water at 100°C is:
(a) 55 mm Hg **(b)** 760 mm Hg
(c) 355 mm Hg **(d)** 1489 mm Hg

5. Which one of the following does not show hydrogen bonding:
(a) Water **(b)** Ethyl alcohol
(c) Phenol **(d)** Diethyl ether

6. Liquid crystal is discovered by:
(a) William Crooks **(b)** Fredrick Reinitzer
(c) J.J. Thomson **(d)** Braxis

7. Hydrogen bonding involves in:
(a) Solubility **(b)** Detergent
(c) Biological molecules **(d)** All of these

8. Water has maximum density at:
(a) 0°C **(b)** 2°C
(c) 4°C **(d)** 100°C

9. The conversion of vapours back into their liquid state is called:
(a) Crystallization **(b)** Vaporization
(c) Distillation **(d)** Condensation

10. The boiling point increases down the zero group element due to:

(a) Ion dipole forces **(b)** London forces

(c) Hydrogen bonding **(d)** Dipole-dipole forces

11. Vapour pressure is not affected by:

(a) Surface area **(b)** Temperature

(c) Pressure **(d)** Intermolecular forces

12. Rising of a wetting liquid in a capillary tube is due to:

(a) Surface tension **(b)** Cohesive forces

(c) Adhesive forces **(d)** Viscosity

13. Kerosene oil is used to kill mosquitoes because it has surface tension:

(a) Very strong **(b)** Very weak

(c) Zero **(d)** No effect on surface tension

14. Molar heat of vaporization of water is:

(a) 40.7 KJ/mole **(b)** 40.7 J/mole

(c) 40.7 cal/mole **(d)** 40.7 KCal/mole

15. A solid may be made up of:

(a) Atoms **(b)** Ions

(c) Molecules **(d)** All

16. $a \neq b \neq c$, $\alpha \neq \beta \neq \gamma \neq 90°$ is representation of crystal system:

(a) Monoclinic **(b)** Triclinic

(c) Hexagonal **(d)** Trigonal

17. Which solids are called true solids:

(a) Metallic **(b)** Amorphous

(c) Crystalline **(d)** Vitreous

18. Bucky balls is an allotropic form of:

(a) Sulphur **(b)** Carbon

(c) Silica **(d)** Tin

19. Which one of the following is isotropic:

(a) Graphite **(b)** Mercury

(c) Borax **(d)** Brass

20. Instantaneous dipole and induce dipole force is also called:

(a) Debye force **(b)** London disperssion force

(c) Van der Waal's force **(d)** Hydrogen bonding

21. Polarizability generally ———— down the group:

(a) Increases **(b)** Decreases

(c) Negligible **(d)** Remain constant

22. Evaporation of water is possible at:

(a) 0°C **(b)** 100°C

(c) Above 100°C **(d)** All temperature

23. When external pressure is 23.7 torr, boiling point of water is:

(a) 200°C **(b)** 100°C

(c) 98°C **(d)** 25°C

24. Existence of an element in more than one form is known as:

(a) Allotropy **(b)** Isomorphism

(c) Isotropy **(d)** None of these

25. Molecular crystals are generally:

(a) Hard **(b)** Relatively soft

(c) Unstable **(d)** Do not exist

26. Which pair of molecules have Debye forces in them:

(a) Ar and Ar **(b)** Argon and water

(c) Na^+ ion and water **(d)** Water and water

27. Which one of the following liquid has low vapour pressure at 25°C:

(a) Water **(b)** Ethyl alcohol

(c) Acetone **(d)** Diethyl ether

28. The shape of diamond crystal is:

(a) Cubic **(b)** Hexagonal

(c) Tetragonal **(d)** Orthorhombic

29. Which pair of compounds are isomorphic in nature:

(a) NaCl and KNO_3 **(b)** KNO_3 and MgO

(c) MgO and NaF **(d)** NaF and $CaCO_3$

30. Crystalline solids do not have:

(a) Rigidity **(b)** Characteristic geometry

(c) Compressibility **(d)** All above

answers

1.	(b)	**2.**	(d)	**3.**	(c)	**4.**	(b)	**5.**	(d)
6.	(b)	**7.**	(d)	**8.**	(c)	**9.**	(d)	**10.**	(b)
11.	(a)	**12.**	(c)	**13.**	(b)	**14.**	(a)	**15.**	(d)
16.	(b)	**17.**	(c)	**18.**	(b)	**19.**	(b)	**20.**	(b)
21.	(a)	**22.**	(d)	**23.**	(d)	**24.**	(a)	**25.**	(b)
26.	(b)	**27.**	(a)	**28.**	(a)	**29.**	(c)	**30.**	(c)

CHAPTER 5

ATOMIC STRUCTURE

MULTIPLE CHOICE QUESTIONS

1. The maximum number of electrons in a sub-shell with $l = 3$ is:

(a) 6 **(b)** 10
(c) 14 **(d)** 18

2. Radius of the third shell of H-atom is:

(a) 5.716°A **(b)** 4.761°A
(c) 6.671°A **(d)** 3.716°A

3. Colour of fluorescence produced by cathode rays depends upon:

(a) Temperature **(b)** Pressure
(c) Volume **(d)** Composition of glass

4. A fast moving neutron can eject from nitrogen:

(a) γ-rays **(b)** α-rays
(c) β-rays **(d)** Electrons

5. Pressure in gas discharge tube was kept:

(a) 10 torr **(b)** 1 torr
(c) 0.1 torr **(d)** 0.01 torr

6. Angle of deflection of cathode rays in electric field was studied by:

(a) Hitorff **(b)** Stoney
(c) Thomson **(d)** Perrin

7. Positive rays give flash on:

(a) $AgNO_3$ plate **(b)** AgCl plate
(c) ZnO **(d)** ZnS

8. Free neutron change into proton with the emission of:

(a) Energy **(b)** Positron
(c) Electron **(d)** Meson

9. The value of e/m ratio of electron is ———— C-kg^{-1}:

(a) 6.02×10^{23} **(b)** 1.7588×10^{20}

(c) 9.1095×10^{-31} **(d)** 1.7588×10^{11}

10. Charge of electron was measured by:

(a) J.J Thomson **(b)** Millikan

(c) Rutherford **(d)** Perrin

11. Angular momentum of an electron:

(a) $mv = \frac{nh}{2\pi}$ **(b)** $mvr = \frac{nh^2}{4\pi}$

(c) $mv = \frac{nh}{2\pi}$ **(d)** $mvr = \frac{nh}{2\pi}$

12. Plank's equation is:

(a) $E = mc^2$ **(b)** $mvr = \frac{nh}{2\pi}$

(c) $E = hv$ **(d)** $\lambda = \frac{h}{mv}$

13. Millikan used ———— in his atomizer:

(a) Milk **(b)** Honey

(c) Oil **(d)** Water

14. When electron de-excite back into orbit 1, then series obtained is:

(a) Lyman **(b)** Paschen

(c) P fund **(d)** Brackets

15. The wave number of the light emitted by a certain source is 2×10^6 m^{-1}. The wavelength of this light will be:

(a) 500 nm **(b)** 500 m

(c) 200 nm **(d)** 5×10^7 m

16. Quantum number values for 2p orbitals are:

(a) $n = 2, l = 1$ **(b)** $n = 1, l = 2$

(c) $n = 1, l = 0$ **(d)** $n = 2, l = 0$

17. When 6d orbital is complete, entering electron goes into:

(a) 7f **(b)** 7s

(c) 7p **(d)** 7d

18. The e/m value for the positive rays is maximum for:

(a) Hydrogen **(b)** Helium

(c) Nitrogen **(d)** Oxygen

19. The radius of first orbit of hydrogen atom is:

(a) 0.329°A **(b)** 0.429°A

(c) 0.529°A **(d)** 0.229°A

20. Total number of d-electrons in an atom of atomic number 26 is:

(a) 4 **(b)** 5

(c) 6 **(d)** 7

21. Which of the following orbital is not possible:

(a) 3p **(b)** 4s

(c) 2d **(d)** 1s

22. Spin quantum number was given by:

(a) Aufbau **(b)** Bohr

(c) Sommerfeld **(d)** Goudsmit & Uhlenbech

23. X-rays have same nature as:

(a) Alpha rays **(b)** Beta rays

(c) Gamma rays **(d)** Cathode rays

24. The value of Rhdberg constant is:

(a) $1.6 \times 10^7\ m^{-1}$ **(b)** $1.9768 \times 10^7\ m^{-1}$

(c) $1.09678 \times 10^7\ m^{-1}$ **(d)** $1.7904 \times 10^7\ m^{-1}$

25. Balmer series lie in:

(a) UV region **(b)** Visible region

(c) IR region **(d)** Radio wave region

26. Which one of the following orbital will be first filled:

(a) 4f **(b)** 5d

(c) 3d **(d)** 4s

27. An orbital can accommodate max. of:

(a) 2 electrons **(b)** 1 electron

(c) 8 electrons **(d)** 18 electrons

28. The orbital which is spherically symmetrical is:

(a) p **(b)** d

(c) f **(d)** s

29. The SI unit of wave number is:

(a) Cycle per second **(b)** m^{-1}

(c) cm **(d)** m

30. X-rays were discovered by:

(a) Rutherford **(b)** Schrodinger

(c) Bohr **(d)** Roentgen

31. Which of the following particles contain 20n, 19p and 18e:

(a) K^+ **(b)** K

(c) Ar **(d)** Ca^{2+}

32. The electrons in K-shell of the atom will differ in:

(a) Principle quantum number (n) **(b)** Azimuthal quantum number (*l*)

(c) Magnetic quantum number (m) **(d)** Spin quantum number (s)

33. The no. of electrons in the M. shell of the element with atomic number 24 is:

(a) 8 **(b)** 12

(c) 13 **(d)** 14

34. The value of Plank's constant 'h' is:

(a) 6.625×10^{-27} ergs-sec **(b)** 66.256×10^{-27} ergs-sec

(c) 6.02×10^{-15} ergs-sec **(d)** 3.01×10^{-23} ergs-sec

35. If "r" is the radius of first orbit, the radius of "nth" orbit of H-atom will be:

(a) rn^2 **(b)** rn

(c) $\frac{r}{n}$ **(d)** r^2n^2

answers

1.	(c)	**2.**	(b)	**3.**	(d)	**4.**	(b)	**5.**	(d)
6.	(c)	**7.**	(d)	**8.**	(c)	**9.**	(d)	**10.**	(b)
11.	(d)	**12.**	(c)	**13.**	(c)	**14.**	(a)	**15.**	(a)
16.	(a)	**17.**	(c)	**18.**	(a)	**19.**	(c)	**20.**	(c)
21.	(c)	**22.**	(d)	**23.**	(c)	**24.**	(c)	**25.**	(b)
26.	(d)	**27.**	(a)	**28.**	(d)	**29.**	(b)	**30.**	(d)
31.	(a)	**32.**	(d)	**33.**	(a)	**34.**	(a)	**35.**	(a)

CHAPTER 6

CHEMICAL BONDING

MULTIPLE CHOICE QUESTIONS

1. **Which of the following has higher electron affinity:**
   (a) F **(b)** Cl
   (c) Br **(d)** I
2. **Which one is not the absolute term of the element:**
   (a) I.E **(b)** E.A
   (c) E.N **(d)** Atomic size
3. **Which of the following has maximum number of unpaired electrons:**
   (a) $_6C^{12}$ **(b)** $_7N^{14}$
   (c) $_9F^{19}$ **(d)** $_{13}Al^{27}$
4. **Elements with high ionization potential values are:**
   (a) Metals **(b)** Liquids
   (c) Solids **(d)** Non-metals
5. **The geometry of $[Cu(NH_3)_4]^{2+}$ should be:**
   (a) Tetrahedral **(b)** Square planer
   (c) Trigonal **(d)** Trigonal bipyramidal
6. **Which of the following elements has least electron affinity value:**
   (a) $_6C^{12}$ **(b)** $_7N^{14}$
   (c) $_8O^{16}$ **(d)** $_9F^{19}$
7. **Which has the minimum bond angle:**
   (a) H_2O **(b)** H_2S
   (c) NH_3 **(d)** NF_3
8. **Which of the following molecule has zero dipole moment:**
   (a) ClO_2 **(b)** CS_2
   (c) NO_2 **(d)** SO_2
9. **In which of the following contain co-ordinate covalent bond:**
   (a) $BaCl_2$ **(b)** NH_4^+

(c) CsCl **(d)** H_2O

10. In which of the compound, there is an electrovalent linkage:

(a) O_2 **(b)** CCl_4

(c) $CHCl_3$ **(d)** NaBr

11. Valence bond theory was proposed by:

(a) Sidgewick and Powell **(b)** L. Pauling

(c) Lewis and Kossel **(d)** Nhylholm and Gillespic

12. Which of the following molecules has zero dipole moment:

(a) NH_3 **(b)** $CHCl_3$

(c) H_2O **(d)** BF_3

13. Which of the hydrogen halides has the highest percentage of ionic character:

(a) HF **(b)** HBr

(c) HCl **(d)** HI

14. Which of the following molecules has unpaired electrons in anti-bonding molecular orbitals:

(a) O_2 **(b)** N_2

(c) B_2 **(d)** F_2

15. Octet rule is not followed by:

(a) NF_3 **(b)** CF_4

(c) CCl_4 **(d)** PCl_5

16. Some covalent compounds are soluble in water because of:

(a) Hydration **(b)** Hydrolysis

(c) H-bonding **(d)** None

17. Which of the following solids does not contain covalent bond:

(a) Copper **(b)** Ice

(c) Diamond **(d)** Graphite

18. Which one of the following has the greater ionic character in it:

(a) HF **(b)** HCl

(c) H_2O **(d)** H_2

19. Which of the following molecule is polar:

(a) CCl_4 **(b)** HCl

(c) BF_3 **(d)** CO_2

20. Which one of the following molecule is linear:

(a) CO_2 **(b)** NH_3

(c) CH_4 **(d)** H_2O

21. Which of the following molecule (or molecular ion) has maximum paramagnetism:

(a) O_2 (b) O_2^+

(c) O_2^- (d) O_2^{-2}

22. Carbon atoms in acetylene (C_2H_2) are ———— hybrid:

(a) sp (b) sp^2

(c) sp^3 (d) dsp^2

23. The shape of $SnCl_2$ molecule is:

(a) Linear (b) Angular

(c) Tetrahedral (d) Trigonal planer

24. The shape of H_2O molecule is:

(a) Linear (b) Tetrahedral

(c) Angular (d) Pyramidal

25. Which one of the following molecule have angle of 120°:

(a) $BeCl_2$ (b) BF_3

(c) CH_4 (d) NH_3

26. One Debye is equal to:

(a) 1.66×10^{-24} C.m (b) 9.1×10^{-31} C.m

(c) 6.02×10^{-23} C.m (d) 3.33×10^{-30} C.m

27. Coordinate covalent bond is present in:

(a) NH_4^+ (b) H_3O+

(c) $N_2H_5^+$ (d) All of these

28. Which of the following molecule is not linear:

(a) CO_2 (b) CS_2

(c) SO_2 (d) HCN

29. The bond order of H_2^+ is:

(a) One (b) Half

(c) Two (d) One and half

30. What type of bonding is present in NH_4Cl:

(a) Ionic (b) Covalent

(c) Coordinate covalent (d) All of these

answers

1.	(b)	**2.**	(c)	**3.**	(b)	**4.**	(d)	**5.**	(b)
6.	(b)	**7.**	(b)	**8.**	(b)	**9.**	(b)	**10.**	(d)
11.	(b)	**12.**	(d)	**13.**	(a)	**14.**	(a)	**15.**	(d)

16.	(c)	**17.**	(a)	**18.**	(a)	**19.**	(b)	**20.**	(a)
21.	(a)	**22.**	(a)	**23.**	(b)	**24.**	(c)	**25.**	(b)
26.	(d)	**27.**	(d)	**28.**	(c)	**29.**	(b)	**30.**	(d)

CHAPTER 7

THERMOCHEMISTRY

MULTIPLE CHOICE QUESTIONS

1. Calorie is equivalent to:

(a) 0.4184 J **(b)** 41.84 J

(c) 4.184 J **(d)** 418.4 J

2. If an exothermic reaction is allowed to take place very rapidly in air, the temperature of surrounding air:

(a) Increases **(b)** Decreases

(c) Remains constant **(d)** Both (a) and (b)

3. The spontaneous reaction are usually:

(a) Exothermic **(b)** Fast

(c) Endothermic **(d)** Both (a) and (b)

4. In an exothermic reaction ΔH is:

(a) Unity **(b)** Zero

(c) Less than zero **(d)** More than unity

5. The enthalpy of an element in standard states is:

(a) 1 KJ-mol^{-1} **(b)** Zero

(c) 298 KJ-mol^{-1} **(d)** None of these

6. First law of thermodynamics is represented as:

(a) $\Delta E = q + RT$ **(b)** $\Delta E = \Delta H$

(c) $\Delta E = q + W$ **(d)** $\Delta E = q + \Delta P$

7. The conditions for standard enthalpy change is:

(a) 1 atm and 273 K **(b)** 1 atm and 298 K

(c) 1 atm and 0 K **(d)** 1 atm and –273°C

8. The unit of enthalpy change is:

(a) Joule **(b)** Coulomb
(c) Volt **(d)** $kgm^{-1}.s^{-1}$

9. Which substance has $\Delta E = \Delta H$ and no pressure-volume work:
(a) Liquids only **(b)** Solids only
(c) Gases only **(d)** Liquids and solids

10. In thermochemistry force displacement work is replaced by:
(a) Pressure volume work **(b)** Pressure temperature
(c) Temperature volume work **(d)** None of these

11. An isothermal process is one in which:
(a) $\Delta E = 0$ **(b)** $\Delta T = 0$
(c) $\Delta V = 0$ **(d)** $\Delta E = W$

12. At constant pressure, heat of reaction is represented by:
(a) ΔH **(b)** ΔE
(c) ΔS **(d)** ΔP

13. At constant volume, heat of reaction is represented by:
(a) ΔH **(b)** ΔE
(c) ΔS **(d)** ΔG

14. The smallest unit of heat energy is:
(a) Calorie **(b)** Joule
(c) Erg **(d)** Kilo Joule

15. ΔHn for the reaction $NaOH + CH_3COOH$ is:
(a) 57 KJ **(b)** Less than 57 KJ
(c) Zero **(d)** More than 57 KJ

answers

1.	(c)	**2.**	(a)	**3.**	(a)	**4.**	(c)	**5.**	(b)
6.	(c)	**7.**	(b)	**8.**	(a)	**9.**	(d)	**10.**	(a)
11.	(b)	**12.**	(a)	**13.**	(b)	**14.**	(c)	**15.**	(b)

CHAPTER 8

CHEMICAL EQUILIBRIUM

MULTIPLE CHOICE QUESTIONS

1. The pOH of 10^{-3} mol. dm^{-3} of H_2SO_4 solution is:

(a) 3.0 **(b)** 11.3

(c) 2.0 **(d)** 1.5

2. Strength of an acid can be determined by:

(a) pKa **(b)** pH

(c) Ka **(d)** All of these

3. Strength of an acid is directly related to the value of:

(a) pKa **(b)** pH

(c) Ka **(d)** Kw

4. The value of PK_w at 25°C is:

(a) 10^{14} **(b)** 10^{-14}

(c) 14 **(d)** 7

5. The sum of $[H^+]$ and $[OH^-]$ in pure water is:

(a) 7 **(b)** 14

(c) 10^{-14} **(d)** 2×10^{-7}

6. Almost forward reaction is complete when:

(a) K_C is very large **(b)** K_C is very small

(c) Moderate K_C value **(d)** None of these

7. Ka value for acetic acid CH_3COOH at 25°C is:

(a) 1.85×10^{-5} **(b)** 1.85×10^{-10}

(c) 1.85×10^{-15} **(d)** 1.85×10^{-20}

8. The unit of "K_C" for the reaction

$2SO_{2(g)} + O_{2(g)} \underset{450^{\circ}C\,200\,atm}{\overset{V_2O_{5(s)}}{\rightleftharpoons}} 2SO_{3(g)}$ **is:**

(a) $mol.dm^{-3}$ **(b)** $mol^{-1}.dm^{+3}$

(c) $mol^{2}.dm^{-6}$ **(d)** No unit

9. The pOH value of 0.001 M HCl solution in water is:

(a) 11 **(b)** 2

(c) 4 **(d)** Zero

10. pH of human blood is:

(a) 7.0 **(b)** 7.35

(c) 7.85 **(d)** 6.65

11. The molarity of pure water is:

(a) 7 M **(b)** 22.4 M

(c) 55.5 M **(d)** 14 M

12. The sum of PK_a and PK_b is:

(a) Zero **(b)** Seven

(c) 10^{-14} **(d)** 14

13. The pH of 0.001 M NaOH solution is:

(a) 11 **(b)** 8

(c) 3 **(d)** 12

14. A solution having zero pH value will be:

(a) Highly acidic **(b)** Neutral

(c) Basic **(d)** Highly basic

15. Which of the following can affect the K_C value of a reaction:

(a) Temperature **(b)** Pressure

(c) Catalyst **(d)** None of these

16. The K_{sp} has units of $mol^2.dm^{-6}$ in:

(a) $AgCl \rightleftharpoons Ag^{+} + Cl^{-}$ **(b)** $2NO_2 \rightleftharpoons 2NO + O_2$

(c) $CaF_2 \rightleftharpoons Ca^{2+} + 2F^{-}$ **(d)** $PbCl_2 \rightleftharpoons Pb^{2+} + 2Cl^{-}$

17. The pH of soft drink is:

(a) > 7 **(b)** < 7

(c) 7 **(d)** Zero

18. If [Salt] = [Acid] then pH of an acidic buffer will be:

(a) Equal to pKa **(b)** Less than pKa

(c) More than pKa **(d)** No effect on pH

19. For $N_2 + 3H_2 \rightleftharpoons 2NH_3$

(a) $K_C = Kp$ **(b)** $Kp = K_C(RT)^1$

(c) $Kp = K_C(RT)^{-2}$ **(d)** $Kp = K_C(RT)^{-1}$

20. pH of a buffer solution having 0.01M CH_3COONa and 0.1M CH_3COOH (pKa = 4.74) is:

(a) 4.74 **(b)** 3.74

(c) 5.74 **(d)** 0

21. For which system does the equilibrium constant, K_C has units of (concentration)$^{-1}$:

(a) $N_2 + 3H_2 \rightleftharpoons 2NH_3$ **(b)** $H_2 + I_2 \rightleftharpoons 2HI$

(c) $2NO_2 \rightleftharpoons N_2O_4$ **(d)** $2HF \rightleftharpoons H_2 + F_2$

22. The pH of 10^{-3} mol.dm^{-3} of H_3BO_3 solution is:

(a) 3.0 **(b)** 2.7

(c) 2.0 **(d)** 10.5

23. The Ksp of AgCl is 2.0×10^{-10} mol^2.dm^{-6}. The maximum concentration of Ag^{+1} ions in the solution is:

(a) 2.0×10^{-10} mol-dm^{-3} **(b)** 1.41×10^{-5} mol-dm^{-3}

(c) 1.0×10^{-5} mol-dm^{-3} **(d)** 4.0×10^{-20} mol-dm^{-3}

24. Unit of K_w are:

(a) mol-dm^{-3} **(b)** mol^2-dm^{-6}

(c) mol^2-dm^{-3} **(d)** mol^2-dm^{+3}

25. Buffer action can be explained by:

(a) Common ion effect **(b)** Law of mass action

(c) Le-Chatlier's principle **(d)** All of these

26. Solubility of $Ca(OH)_2$ is exothermic, its solubility will increase:

(a) At high temperature **(b)** At low temperature

(c) Temperature independent **(d)** None

27. The substance which increases the rate of reaction, but remains unchanged at the end of reaction is called:

(a) Indicator **(b)** Promoter

(c) Catalyst **(d)** Activated complex

28. The suppression of ionization of weak electrolyte in the presence of strong electrolyte with one same ion is called:

(a) Hydration **(b)** Common ion effect

(c) Hydrolysis **(d)** Electrolysis

29. Which of the following will form a stable acidic buffer:

(a) $CH_3COOH + NaOH$ **(b)** $H_2S + NaOH$

(c) $NH_4OH + HCl$ **(d)** $Ca(OH)_2 + HCl$

30. Which of the following efforts will change K_C for the reaction:

(a) Adding catalyst **(b)** Decreasing pressure

(c) Increasing concentration **(d)** Increasing temperature

answers

1.	(b)	**2.**	(d)	**3.**	(c)	**4.**	(c)	**5.**	(d)
6.	(a)	**7.**	(a)	**8.**	(b)	**9.**	(a)	**10.**	(b)
11.	(c)	**12.**	(d)	**13.**	(a)	**14.**	(a)	**15.**	(a)
16.	(a)	**17.**	(b)	**18.**	(a)	**19.**	(c)	**20.**	(b)
21.	(c)	**22.**	(a)	**23.**	(b)	**24.**	(b)	**25.**	(d)
26.	(b)	**27.**	(c)	**28.**	(b)	**29.**	(a)	**30.**	(d)

CHAPTER 9

SOLUTIONS

MULTIPLE CHOICE QUESTIONS

1. 18 g glucose is dissolved in 90 g of water. The relative lowering of vapour pressure is equal to:

(a) $\frac{1}{5}$ **(b)** 5.1

(c) $\frac{1}{51}$ **(d)** 6

2. A solution of glucose is 10%. The volume to which 1g mole of it dissolved will be:

(a) 1 dm^3 **(b)** 1.8 dm^3

(c) 200 cm^3 **(d)** 900 cm^3

3. Which of the following liquid pairs will obey the Raoult's law:

(a) $C_2H_5OH + H_2O$ **(b)** $CH_3COCH_3 + CHCl_3$

(c) $C_2H_5I + C_2H_5Br$ **(d)** $HCl + H_2O$

4. 10g of NaOH has been dissolved per dm^3 of solution. The molarity of solution is:

(a) 0.5 M **(b)** 0.25 M

(c) 1 M **(d)** 2 M

5. The sum of mole fraction of all the components of solution is always equal to:

(a) Unity **(b)** 100

(c) Less than one **(d)** Less than 100

6. Which of the following concentration unit is used for very dilute solutions:

(a) Molarity **(b)** Normality

(c) Molality **(d)** ppm

7. Which of the following is affected by temperature change:

(a) Molality **(b)** Molarity

(c) Mole fraction **(d)** None of these

8. The substance which has water of crystallization in it, is called:

(a) Hydrate **(b)** Hydride

(c) Hydrolysis **(d)** Complex

9. Hydrolysis of CH_3COOK will produce:

(a) Acidic solution **(b)** Basic solution

(c) Neutral solution **(d)** None of these

10. The molarity of 2% $\frac{W}{V}$ NaOH solution is:

(a) 2 **(b)** 0.25

(c) 0.05 **(d)** 0.5

11. If 9.8g H_2SO_4 is present in one dm^3 of solution, the solution is:

(a) 0.1 N **(b)** 0.1 M

(c) 0.1 m **(d)** 0.5 M

12. Which one of the following salts do not hydrolyse:

(a) $CuSO_4$ **(b)** Na_2CO_3

(c) Na_2SO_4 **(d)** $Al_2(CO_3)_3$

13. An aqueous solution boil at 100.52°C. It should freeze at:

(a) 0°C **(b)** –1.86°C

(c) –2°C **(d)** +1.86°C

14. 15g urea is dissolved in 180 cm^3 of water. The relative lowering of vapour pressure will be:

(a) 0.024 **(b)** 25.024

(c) 2.5 **(d)** 10.25

15. Which has maximum freezing point:

(a) 1m NaCl **(b)** 1m KCl

(c) 1m $CaCl_2$ **(d)** 1m Urea

16. Which cation has least heat of hydration:

(a) Li^+ **(b)** Na^+

(c) K^+ **(d)** Mg^{+2}

17. 10% aqueous solution of glucose freezes at:

(a) 0°C **(b)** Less than 0°C

(c) Greater than 0°C **(d)** Greater than 10°C

18. A mixture of benzene and toluene form:

(a) Ideal solution **(b)** Non-ideal solution

(c) Azeotropic mixture **(d)** Suspension

19. Which pair of mixture is called ideal solution:

(a) $C_6H_5Cl + C_6H_5Br$ **(b)** $H_2O + C_2H_5OC_2H_5$

(c) $C_2H_5OH + H_2O$ **(d)** $HCl + H_2O$

20. In a solution 7.8g benzene and 46g toluenc ($C_6H_5CH_3$) is present, the mole fraction of benzene is:

(a) $\frac{1}{2}$ **(b)** $\frac{1}{3}$

(c) $\frac{1}{5}$ **(d)** $\frac{1}{6}$

answers

1.	(c)	**2.**	(b)	**3.**	(c)	**4.**	(b)	**5.**	(a)
6.	(d)	**7.**	(b)	**8.**	(a)	**9.**	(b)	**10.**	(d)
11.	(b)	**12.**	(c)	**13.**	(b)	**14.**	(a)	**15.**	(d)
16.	(c)	**17.**	(b)	**18.**	(a)	**19.**	(a)	**20.**	(d)

CHAPTER 10

ELECTROCHEMISTRY

MULTIPLE CHOICE QUESTIONS

1. The oxidation state of carbon is $C_6H_{12}O_6$ is:

(a) O **(b)** +6

(c) –6 **(d)** +12

2. Which of the following has same oxidation state in all of its compounds:

(a) Be **(b)** Br

(c) Cl **(d)** N

3. In which of the following reactions, hydrogen behave as an oxidizing agent:

(a) $H_2 + Cl_2 \longrightarrow 2HCl$ **(b)** $C_2H_4 + H_2 \longrightarrow C_2H_6$

(c) $2Na + H_2 \longrightarrow 2NaOH$ **(d)** $N_2 + 3H_2 \longrightarrow 2NH_3$

4. The change in oxidation state of nitrogen in the following reaction is:

$$Cu + HNO_3 \longrightarrow Cu(NO_3)_2 + NO_2 + H_2O$$

(a) +5 to –2 **(b)** +5 to +4

(c) +5 to 0 **(d)** 0 to –4

5. The colour of K_2MnO_4 solution is:

(a) Pink **(b)** Violet

(c) Green **(d)** Purple

6. The oxidation state of Mn in K_2MnO_4 is:

(a) +7 **(b)** +6

(c) +5 **(d)** +4

7. The overall positive reaction potential value predicts that process is:

(a) Not feasible **(b)** Feasible

(c) Impossible **(d)** No identification

8. Value of standard reduction potential for strong reducing agent is:

(a) Large and positive **(b)** Zero

(c) Large and negative **(d)** Any of above

9. Fuel cell are the means by which chemical energy is converted into:

(a) Heat energy **(b)** Electrical energy

(c) Magnetic energy **(d)** Sound energy

10. The oxidation number of sulphur in $Na_2S_4O_6$ is:

(a) +2 **(b)** +4

(c) +2.5 **(d)** +6

11. In which of the following compounds oxidation number of sulphur is negative:

(a) SO_2 **(b)** H_2SO_4

(c) H_2S **(d)** Na_2SO_4

12. In silver oxide battery anode is made up of:

(a) Zn **(b)** NiO_2

(c) Ag_2O **(d)** Cd

13. Which of the following is a primary cell:

(a) Fuel cell **(b)** Lead accumulator

(c) Alkaline dry cell **(d)** Daneil cell

14. In superoxides, the oxidation number of oxygen is:

(a) 0 **(b)** +1

(c) −1 **(d)** $-\frac{1}{2}$

15. The cell in which a non-spontaneous redox reaction takes place as a result of electricity is known as:

(a) Voltaic cell **(b)** Electrolytic cell

(c) Danial cell **(d)** Dry cell

16. Which of the following is a reducing agent in following reaction

$$P + HNO_3 \longrightarrow H_3PO_4 + NO + H_2O$$

(a) Phosphorous **(b)** Nitrogen

(c) Nitric acid **(d)** Water

17. Reduction potential of SHE is 0.00 volts its oxidation potential will be:

(a) 0.1 volts **(b)** 2 volts

(c) 1.0 volt **(d)** 0.0 volts

18. The increase in positive oxidation state is called:

(a) Displacement **(b)** Oxidation

(c) Reduction **(d)** Redox

19. Which of the following is not the reduction:

(a) Gain of electron **(b)** Gain of hydrogen

(c) Loss of electrons **(d)** Decrease in oxidation state

20. In which compound oxidation state of chlorine is +5:

(a) NaCl **(b)** HOCl

(c) $NaClO_3$ **(d)** $NaClO_4$

21. In lead accumulator, cathode is made up of:

(a) Pb **(b)** Pb coated with PbO_2

(c) $PbSO_4$ **(d)** H_2SO_4

22. Which of the following cannot conduct electricity:

(a) $NaCl_{(l)}$ **(b)** $NaCl_{(s)}$

(c) $Graphite_{(s)}$ **(d)** $NaCl_{(aq)}$

23. Down's cell is used for the extraction of:

(a) Al **(b)** Cu

(c) Na **(d)** NaOH

24. During electrolysis reaction that take place at cathode:

(a) Oxidation **(b)** Reduction

(c) Redox **(d)** None of these

25. When Brine solution is electrolysed which of the following ions get discharged at anode:

(a) OH^- **(b)** Cl^-

(c) Na^+ **(d)** H^+

answers

1.	(a)	**2.**	(a)	**3.**	(c)	**4.**	(b)	**5.**	(c)
6.	(b)	**7.**	(b)	**8.**	(c)	**9.**	(b)	**10.**	(c)
11.	(c)	**12.**	(a)	**13.**	(c)	**14.**	(d)	**15.**	(b)
16.	(a)	**17.**	(d)	**18.**	(b)	**19.**	(d)	**20.**	(c)
21.	(b)	**22.**	(b)	**23.**	(c)	**24.**	(b)	**25.**	(b)

CHAPTER 11

REACTION KINETICS

MULTIPLE CHOICE QUESTIONS

1. The unit of rate constant 'K' for a first order reaction:

(a) sec^{-1} **(b)** $mol.dm^{-3}.sec$

(c) $mol.dm^{-3}.sec^{-1}$ **(d)** $mol^{-1}.dm^{3}.sec$

2. If the rate of decay of radio-active isotope decreases from 200 cpm to 25 cpm after 24 hours. What is its half life:

(a) 3 hours **(b)** 4 hours

(c) 6 hours **(d)** 8 hours

3. In a multistep reaction, the slowest step is:

(a) Mechanism step **(b)** Rate determing step

(c) Enthalpy determing step **(d)** None of above

4. The rate of reaction between two specific time intervals is called:

(a) Rate of reaction **(b)** Average rate

(c) Instantaneous rate **(d)** None

5. When rate of reaction is retarded by adding a substance, it is said to be:

(a) Catalyst **(b)** Negative catalyst

(c) Autocatalyst **(d)** None of the above

6. Rate = $K[A]^2[B]$ for the reaction $2A + B \longrightarrow$ Product and 'A' is present in large excess, then order of reaction is:

(a) 1 **(b)** 2

(c) 3 **(d)** 4

7. The unit of the rate constant is the same as that of the rate of reaction is:

(a) 1^{st} order reaction **(b)** 2^{nd} order reaction

(c) Zero order reaction **(d)** 3^{rd} order reaction

8. The rate equation for a reaction is Rate = K[A], what are the units of K:

(a) S^{-1} **(b)** $mol.dm^{-3}$

(c) $mol.dm^{-3}.s^{-1}$ **(d)** $mol^{-1}.dm^{3}.s^{-1}$

9. The half life of zero order reaction is:

(a) Proportional to initial concentration of reactants

(b) Independent of initial concentration of reactant

(c) Inversely proportional to initial concentration of reactant

(d) None of these

10. Photosynthesis has order of reaction:

(a) 0 **(b)** 1

(c) 2 **(d)** Fractional order

11. The unit of rate constant "K" is $mol^{-1}.dm^{3}.sec^{-1}$ for a chemical reaction the order of reaction is:

(a) 0 **(b)** 1

(c) 2 **(d)** 3

12. Which types of metals are usually used as catalyst:

(a) Coinage metal **(b)** Alkali metals

(c) Transition metal **(d)** Alkaline earth metal

13. A substance which itself is not a catalyst but increases the activity of a catalyst is called:

(a) Promoter **(b)** Poison

(c) Inhibitor **(d)** Enzyme

14. Enzymes are:

(a) Micro-organism **(b)** Proteins

(c) Moulds **(d)** Inorganic compound

15. The change in concentration of reactants or products per unit time is called:

(a) Rate law **(b)** Rate of reaction

(c) Rate constant **(d)** Rate equation

16. Which technique is used to determine the absorption of radiations:

(a) Spectrometry **(b)** Dilatometric method

(c) Refractometric method **(d)** Optical rotation method

17. Which property of a liquid is measured by polarimeter:

(a) Conductance **(b)** Refractive index

(c) Optical activity **(d)** Change in volume

answers

1.	(a)	**2.**	(d)	**3.**	(b)	**4.**	(b)	**5.**	(b)
6.	(a)	**7.**	(c)	**8.**	(a)	**9.**	(a)	**10.**	(a)
11.	(c)	**12.**	(c)	**13.**	(a)	**14.**	(b)	**15.**	(b)
16.	(a)	**17.**	(c)						