QUESTION BANK FOR CLASS X

CLAPTER – 1

Concerns about our Environment

Concerns about our Environment

Group-A

Multiple choice questions

1) Which one of the following substance is used in solar cell?
(a) Alumininum (b) Carbon (c) Silicon (d) none of these

2) Coldest region of atmosphere is -
(a) Thermosphere (b) stratosphere (c) Mesosphere (d) Exosphere

3) Among the following substances which has greater calorific value?
(a) Petrol (b) diesel (c) Coal (d) Natural gas

4) Which of the following green house gas contributes most for global warming?
(a) N_2O (b) CO_2 (c) H_2O vapour (d) CH_4

5) Methane hydrate is -
(a) $CH_4 \cdot H_2O$ (b) $2CH_4 \cdot nH_2O$ (c) $4CH_4 \cdot 23H_2O$ (d) $23CH_4 \cdot 4H_2O$

6) Nox is
(a) NO and NO_2 (b) N_2O and NO (c) NO_2 and N_2O (d) $4NO_3$ and NO

7) The atom is CFC that causes depletion of ozone layer is -
(a) Cl (b) C (c) F (d) H

8) The range of stratosphere of atmosphere is-
(a) 16-45 Km (b) 40-80 Km (c) 0-45 Km (d) 50-100 Km

9) The oxide of nitrogen discharge from supersonic jet that causes severe damage of ozone layer is-
(a) NO_2 (b) N_2O (c) NO (d) N_2O_4

10) Which is not a fuel?
(a) Coal (b) Petrol (c) Diesel (d) Ethanol

Group - B
Very short questions

1) What is Stratopause?
2) In which layer of atmosphere, connection current and storm are noted?
3) What measures can be taken to use solar Energy at night?
4) What is bio-fuel?
5) Write down the name of a natural green house gas?
6) Write the main constituent of bio-gas?
7) What is CBM
8) Name one Inorganic greenhouse gas?
9) Write the role of methanogenic bacteria?
10) Write the one used use of biogas?
11) Name the ray that causes greenhouse effect?
12) Write one use of solar cell?

Group-C
Short type questions

1) Ozone layer is called "ozone umbrella" - explain the significance.
2) Write the role of a methogenic bacteria that enhances the amount of methane in atmosphere?
3) Why methane gas is collected prices to exploitation of coal from coal mine?
4) What is sustainable development?
5) Write two adverse effect of greenhouse effects?
6) Write two hazards of depletion of ozone layer?
7) What is the use of methane hydrate? where it is found
8) Give the reaction of formation of O_3 in atmospheric layer?
9) Why solar energy is regarded as an alternative source of conventional energy?
10) Name one solid and one liquid fossil fuel?

11) Which atom of CFC causes depletion of O_3 layer? What is the effect of such depletion?

12) What is biomas? Write the formula of methane hydrate.

CLAPTER – 2

Behaviour of Gases

equation of this reaction. What is denatured spirit?

BEHAVIOUR OF GASES

GROUP - A

1) MCQ:

1) Boyle's law expresses
A- Change of volume with pressure at constant temperature
B- Change of pressure with temperature at constant temperature
C- Change of volume with temperature at constant temperature
D- All of the above.

2) The quantities fixed in Boyle's Law are
A- Mass and temperature of gas.
B- Temperature and pressure of gas
C- Volume and temperature of gas
D- Pressure and mass of gas.

3) Ideal gas abeys
A- Boyle's law B- Charles' law C- Avogadro's Law.
D- All of the above

4) At a temperature of -273°C the volume "V" of ideal gas is.
~~A- $V \propto \frac{1}{T}$ B- $V \propto T^2$ C- $V \propto T$ D- $V \propto T^{1/2}$~~
A- $V < 0$ B- $V > 0$ C- $V = 0$ D- None of these

5) Gases deviates from ideal behaviour because the molecules are
A- Colourless B- Attract each other C- Contain covalent bond
D- Show Brownian motion.

6- Constant quantity common for Boyle's Law & Charle's law is.
A- Mass B- Volume C- Temperature D- Pressure.

7) Volume of 0.44 g of carbon dioxide at STP is
A- 22.4 L B- 2.24 L C- 0.224 D- 0.0224 L

8) Moist air is
A- Heavier B- Lighter C- of equal weight D- Sometimes heavier than dry air.

9) Which of the following is not an unit of pressure?
A- Torr B- Bar C- Pascal d- Litre.

10) Molecular weight of gas is
A- Equal B- Two times C- Three times D- four times the vapour density

GROUP-B

II- Very Short Answer type Question:-

i- What is the SI unit of pressure?
ii- Which instrument is used to measure the pressure of gas?
iii- Which quantity are constant in Boyle's Law?
iv- Which quantity are constant in charle's Law?
v- What is the value of absolute zero temperature?
vi- What will be the pressure and volume of a gas at absolute zero?
vii- What is the relation between Celcius & Kelvin scale of temperature?
viii- Which of the temperature is larger, 30°C or 300 K?
ix- What is the value of Avogadro number?
x- Does the velocity of gas change by changing volume or pressure of that gas?

III- Fill up:-

1- The velocity of gas molecules _____ with rise of temperature
2- The value of absolute zero is _____ on celsius scale.

3- Pressure of gas is measured by _____.
4- The equation of ideal gas for n gram-mole is _____.
5- Dimension of universal gas constant is _____.

IV- True or False :-

1- All gases known so far are ideal gases -
2- Gases have neither sharp nor a fixed volume -
3- When air bubble goes upwards in a pond its volume increases.
4- P vs $\frac{1}{V}$ plot is parallel to x-axis -
5- Value of R in litre - atmosphere unit is 0.82 -

GROUP-C

V- Short Answer type :-

1- Mention some properties of gas.
2- State Boyle's Law
3- How pressure varies with volume at constant temperature?
4- (the product of)
4- Why pressure and temperature are mentioned also when the volume of gas is mentioned?
5- What is the value of gas? Give any one unit of volume.
6- State charles Law.
7- When an air bubble rises in a pond its volume increases - why?
8- What is universal gas constant? Why it is called so?
9- Mention two differences of ideal gas and real gas.
10- Why real gases behave like ideal gas at very low pressure and very high temperature explain?

GROUP - D

VI - Long Answer type Question:-

1- Mention and explain three characteristics of gas.
2- State and explain Boyle's Law.
3- State and explain Charles Law in Celsius as well as Kelvine scale.
4- Establish the combined form of Boyle's Law and Charle's Law
5- What are the basic of assumptions of Kinetic theory of gas?
6- How the absolute zero temperature is obtained from charles Law?
7- In which respect real gases are different from ideal gas?
8- Establish the equation of state of 'n' mole ideal gas.
9- State Avagadro's Law. Is it called a project?
10- Which temperature is called absolute zero? Why it is called so? Is it possible to get in actual practice?

CLAPTER – 3

Chemical Calculations

Chemical Calculations

Group-A

Multiple choice questions

1.1) After any chemical reaction the total amount of mass and energy
(a) Increases (b) Decreases (c) Remains Constant (d) None of (A), (B), (C)

1.2) Equation of mass and energy, ~~energy~~ equivalency is
(a) $E = mc^2$ (b) $E = \frac{1}{2}mv^2$ (c) $F = ma$ (d) $W = FS$

1.3) From equation of chemical reaction we get
(a) Qualitative informations only
(b) Quantitative informations only
(c) Both (A) and (B)
(D) None of the (A), (B)

1.4) In case of the reaction in . the volume of ~~reactio~~ reactants and products can be measured by
(a) Monometer (b) Barometer (c) Anemometer (d) Voudiometer

1.5) Apparent mass increase occurs in case of
(a) Burning of paper into ash
(b) Melting of ice
(c) Rust on iron elements
(d) Electroplating

1.6) Relation between mass and mole number is
(a) Mole number = $\frac{\text{molar mass}}{\text{mass}}$

(b) Mole mass = $\frac{\text{mole number}}{\text{mass}}$

(c) Mole number = $\frac{\text{~~mole num~~ mass}}{\text{molar mass}}$

(d) Mole number = mass × molar mass

1.7) In exothermic reaction heat is ~~transformed into energy~~ ejected since
(a) Some amount of energy is transformed into energy
(b) Some amount of energy is transformed into mass
(c) Mass is Constant
(d) None of these

1.8) In endothermic reaction heat is absorbed since
(a) Some amount of energy is transformed into energy
(b) Some amount of energy is transformed into mass
(c) Mass is Constant
(d) None of these

1.9) Vapour density of a gas is
(a) Mass of 1L gas at STP
(b) Mass of 1L gas at a particular temperature
(c) Density in vapour state
(d) Ratio of masses of equal volume of gas and Hydrogen gas

1.10) At NTP the ratio of standard density and vapour density is
(a) 0.89 (b) 0.79 (c) 0.089 (d) 0.079

1.11) Molecular Weight (M) and vapour density (D) are related by
(a) $M = 2D$ (b) $M = D$ (c) $M = \frac{D}{2}$ (d) $M = D^2$

1.12) Molecular Weight of Methane is 16, Which will be the vapour density of Methane?
(a) 8 (b) 32 (c) 16 (d) 22.4

1.13) Energy liberatio for mass difference 1 atomic mass unit is
(a) 931.5 MeV
(b) 93.15 MeV
(c) 1 MeV
(d) 913.3 MeV

1.14) Volume of 8g Methane gas is
(a) 8L (b) 11.2L (c) 22.4L (d) 16L

1.15) $X + Y_2 = XY_2$ If the atomic mass of x and y are 12 and 10, what will be the molecular mass of XY_2?
(a) 44 (b) 28 (c) 40 (d) 4

1.16) Which has minimun mass?
(a) 1g-molecule N_2 (b) 1 mole S (c) 16g O_2 (d) 11.2L CO_2

1.17) A gas has vapour density 32. The mass of 5.6L of the gas is
(a) 32g (b) 64g (c) 16g (d) 24g

1.18) For total combustion of 6g carbon we need the following amount of oxygen
(a) 32g (b) 16g (c) 64g (d) 44g

1.19) $N_2 + 3H_2 = 2NH_3$, For the reaction of 1 mole N_2 and 1 mole H_2, maximum amount of Ammonia is
(a) $\frac{2}{3}$ mole (b) $\frac{4}{3}$ mole (c) $\frac{1}{4}$ mole (d) 1 mole

1.20) The ~~Copper~~ amount of copper obtained for the reaction of 6.53g zinc and Suitable amount of copper sulphate is
(a) 3.15g (b) 6.35g (c) 6.53g (d) 5.35g

1.21) 58.5g NaCl is said to its
(a) Molecular Weight (b) Formula Weight (c) Empirical Weight (d) Atomic Weight

1.22) Which equation obeys the conservation of mass?
(a) $2H_2O \rightarrow H_2 + O_2$
(b) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$
(c) ~~Zn + Hcl~~ $HCl \rightarrow ZnCl_2 + H_2$
(d) $N_2 + H_2 \longrightarrow 4NH_3$

Group-B
Very short answer types questions

2.1) What is the ratio of mole numbers in reaction of Hydrogen and oxygen to create water?

2.2) What is the volume of Carbon dioxide created by heating Calcium Carbonate at STP?

2.3) What is the unit of vapour density?

2.4) What will be the total mass of the products of a reaction, if the masses of reactants are 200g and 100g respectively react completely?

2.5) In which type of reactions measurable change of mass occurs?

3.3) If the mass of a 1L gass is 3.17 g of STP What is the molecular Weight and vapour density of the gas?

3.4) What volume of Ammonia will be obtained from the reaction of Hydrogen with 2.24L Nitrogen at STP?

3.5) What amount of carbon dioxide is generated by the reaction of 10g $CaCO_2$ with excess Hydrochloride acid? [H=1, Cl=35.5]

3.6) A sample of Lime stone contains 50% $CaCO_3$, what amount of calcium oxide is generated by heating 100g of the Sample of Lime stone? [Ca = 40, C=12, O=16]

3.7) What is the percentage of weight loss for heating of Lead nitrate? [Pb=207, N=14, O=16]

3.8) What amount of potassium chlorate ($K clo_3$) is required to produced 20g oxygen gas by heating? [K=30, Cl=35.5, O=16]

3.9) What amount of Ammonia chloride is required to produce ~~of Lime and Ammonia at STP by heating a mixture~~

3.9) What amount of Ammonia chloride is required to produce 11.2 L, ammonia at STP by heating a mixture of Lime and Ammonia chloride?

3.10) A mixture of ICl and ICl_3 is produced by the complete reaction of 14.2g Cl_2 and 25.5g I_2. What will be ratio of mole number of them in the mixture?

3.11) 224 mL Nitrogen and 672 mL Hydrogen are produced due to the Ammonia at STP. Show that this information does not violate the Law of Conservation of mass [N=14,

CLAPTER – 4

Thermal Phenomena

Thermal phenomena

GROUP - A

Multiple choice questions

1.1) On heating the volum of solid material
(a) Increases (b) Decreases (c) Remains Same (d) Increases or decreases.

1.2) On heating, which of the following quantities remains the same in case of solid?
(a) Length (b) Mass (c) Density (d) Volume

1.3) Unit of coefficient of linear expansion is
(a) $°C^{-1}$ (b) $m°C^{-1}$ (c) m^{-1} (d) °C

1.4) α, β and γ are related as follows
(a) $\alpha : \beta : \gamma = 3 : 2 : 1$ (b) $\alpha = \frac{\beta}{2} = \frac{\gamma}{3}$ (c) $\gamma : \beta : \alpha = 1 : 2 : 3$ ~~(d) α~~
(d) $\frac{\alpha}{3} = \frac{\beta}{2} = \gamma$

1.5) Which of the following is not expanded on heating?
(a) Nickel (b) Iron (c) Inver (d) Steel

1.6) Which of the following material is expanded most?
(a) steel (b) Iron (c) Copper (d) Brass

1.7) A bimetallic strip bends on heating due to
(a) Uneven expansions (b) Same expansion (c) No expansion (d) None of these

1.8) The rate of heat flow does not depend on
(a) Cross sectional area
(b) Material of the body
(c) Density
(d) Difference of the thermal conductivity

1.9) The magnitude of the ~~temperature of two surfaces~~ thermal Conductivity for the following substances are in the order
(a) Silver > aluminium > glass > Wood
(b) Aluminium > Silver > glass > Wood
(c) Silver > aluminium > Wood > glass
(d) Aluminium > Silver > Wood > glass

1.10) A good insulator of heat is
(a) Copper (b) Mercury (c) Trapped air (d) Iron

1.11) When temperature rises from 0°C to 15°C, then volume of water
(a) Decreases (b) Increases (c) At first decreases, then increases (d) At first increases, then decreases.

1.12) A good conductor of heat is
(a) Water (b) Benzene (c) Alcohol (d) Mercury

1.13) If thermal conductivity of copper and Diamond are K_{Cu} and K_D respectively then
(a) $K_{Cu} = K_D$ (b) $K_{Cu} > K_D$ (c) $K_{Cu} < K_D$ (d) None of these

1.14) The value of thermal conductivity for ideal insulator is
(a) Infinity (b) Unity (c) Zero (d) Cannot be specified

1.15) The process in which water of a pond becomes hot upto certain depth during summer at noon
(a) Conduction (b) Convection (c) Conduction and Convection (d) Conduction and Radiation.

1.16) The process in which sunlight comes at earth is
(a) Conduction (b) Convection (c) Conduction and Convection (d) Conduction and Radiation

1.12) Relation of coefficient of linear expansion in celsius and Kelvin scale is

(a) $\alpha_K = 1 + \alpha_C$ (b) $\alpha_K = \alpha_C - 1$ (c) $\alpha_K = \alpha_C$ (d) $\alpha_K = \alpha_C^{-1}$

1.13) Which is not a property of liquid?

(a) Apparent expansion (b) Actual expansion (c) Both (A) and (B) (d) None (A), (B) and (C)

Group-B
Very short type questions

2.1) What is the unit of the coefficient of thermal expansion?
2.2) What is the real expansion of liquid?
2.3) What is the apparent expansion of liquid?
2.4) What is the value of volume coefficient of gas?
2.5) What is the value of pressure coefficient of gas?
2.6) If the volume expansion coefficient of a material is 51x 10^{-6}/°C, what will be its linear expansion coefficient?
2.7) What is the relation between the celsius and Kelvin unit of coefficient of thermal expansion?
2.8) Give an example of liquid which is a good conductor of heat?
2.9) Between 27°c and 303 K which indicates higher temperature?
2.10) What property of a material is mentioned ∴ to express the degree of thermal conductaner of that material?
2.11) Name a substance which contract on heating?
2.12) Define the term coefficient of linear expansion?
2.13) Is the coefficient of linear expansion possible in the case of liquid?
2.14) Does the coefficient of surface expansion depend on unit of surface?
2.15) Is there any apparent expansion in gases?
2.16) At which temperature the volume expansion coefficient of water vanishes?
2.17) If a beaker is fully filled with water at 4°c. Now if it is heated. What will be the result?

2.18) Name an apparatus where thermostat is used.

2.19) What will be the ratio of volume coefficient and pressure coefficient for ideal gases?

2.20) If the ratio of length of two iron rode is 1:2, what will be the ratio of linear expansions of them?

Fill in the blanks:

2.21) When some liquid is heated in metal pot, the liquid level initially depressed due to _____

2.22) Exceptional expansion occurs in _____

2.23) The length of a 400 cm long metallic rod increases 88×10^{-4} cm for an increase in ~~temperature by 88×10^{-4} cm for an increase~~ temperature by 2°c, 'α' for rod is _____

2.24) _____ is responsible for thermal ~~condit~~ conduction.

2.

Fill in blanks:

2.21) When some liquid is heated in metal pot, the liquid level initially depressed due to _____

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2.23) The length of a 400 cm long metallic rod increases 88×10^{-4} cm for an increase in temperature by 2°c, 'α' for rod is _____

2.24) _____ is responsible for thermal conduction.

2.25) Real expansion of liquid = _____ + apparent expansion of liquid.

2.26) Expression of thermal resistance is _____

2.27) Thermal conductivity depends on ------

2.28) SI unit of thermal conductivity is ------.

2.29) All the gases are ------ of heat.

2.30) The value of thermal conductivity of ideal conductor is ----

2.31) SI unit of Coefficient of volume expansion is -----

Mention True / False

2.32) Among solid, liquid and gas, gas has the maximum thermal expansion.

2.33) Turpene oil is a good conductor of heat.

2.34) If the thermal conductivity of a substance is K, then thermal resistivity will be $\frac{1}{K}$.

2.35) When a bimetallic strip made of brass and iron is heated, brass exists at outside of curvature.

2.36) When a bimetallic strip made of brass and iron is cooled, brass exists at outside of curvature.

2.37) The relation between linear coefficients of expansion in Celsius and Farenhite scale is $\alpha_F = \frac{5}{9}\alpha_C$

2.38) Volume coefficient and pressure coefficient of gas are equal.

2.39) Initial temperature is taken as 0°C in the definition of coefficient of expansion of gas.

Match both side :

Left	Right
2.41) Coefficient of expansion	(a) $mK\omega^{-1}$
2.42) Thermal conductivity	(b) $°C^{-1}$
2.43) Thermal ~~rest~~ resistivity	(c) $Wm^{-1}K^{-1}$
2.44) Heat	(d) Copper
2.45) Temperature	(e) Air
2.46) Bad conductor	(f) Calorie
2.47) Good conductor	(g) °c

Group-D
Long Answer type.

3.1) Why there exists a small gap in the rail lines?

3.2) On what factors the linear expansion of a metal rod depends?

3.3) Mention some characters of the expansion of solid meterials.

3.4) Show experimentally that different materials exhibit different amount of expansion ~~of solid solid meterials~~ on equal amount of increase of temperature.

3.5) What do you mean by "the coefficient of linear expansion of brass is $0.000019\,^{\circ}C^{-1}$" What will be the value of coefficient of surface expansion of brass?

3.6) If the coefficient of volume expansion of a metal is 36×10^{-6} $^{\circ}C^{-1}$, what will be the values in $^{\circ}F^{-1}$ and $^{\circ}K^{-1}$ units?

3.7) Mention one advantage and one disadvantage of expansion of solid on heating.

3.8) Mention three characters of expansion of liquids.

3.9) Why there are two types of coefficients of expansion of liquid? Which one is greater?

3.10) Discuss about the factors on which the quantity of heat conducted through a solid bar depends?

3.11) Why the pressure is fixed in definition of coefficient of expansion of volume for gas?

CLAPTER – 5

Light

Light

Group - A
Multiple choice questions

1) What is the relation between the radius curvature and the focal length of a mirror?
(a) $f = 2r$ (b) $f = \frac{r}{2}$ (c) $f = \frac{r}{3}$ (d) $f = \frac{3}{2}r$

2) Which of the following colours deviates most when white light is refracted by a prism?
(a) red (b) yellow (c) violet (d) green

3) An object is placed in between the optical centre and focus of a thin convex lens. What is the nature of the image of the object?
(a) real and inverted (b) virtual and inverted (c) real and erect (d) virtual and erect

4) When a ray of light is incident perpandicularly on a transparent glass slab, what will be its angle of deviation?
(a) 0° (b) 180° (c) 30° (d) 90°

5) Which of the following has the highest wavelength?
(a) X-ray (b) γ ray (c) infrared ray (d) ultraviolet ray.

6) In case of refraction, if the angle of incidence and the angle of refraction are 45° and 30° respectively, then the angle of deviation is
(a) 75° (b) 15° (c) 7·5° (d) 37·5°

7) The portion where image is formed in human eye is-
(a) eye ball (b) eye lens (c) blind spot (d) retina

8) Which colour of light deviates least through a prism?
(a) yellow (b) red (c) green (d) violet

9) The value of absolute refractive index of vaccum is-
(a) 0 (b) 1 (c) 1·5 (d) 1·33

10) For a patient suffering from hypermetropia, the image is formed
(a) infront of the retina (b) on the retina (c) behind the retina (d) at blind spot

11) For which of the following colour does a lens have maximum focal length?
(a) violet (b) red (c) green (d) it does not depend on colour

12) For an object placed at the focus of a convex lens, the image will be formed at -
(a) focus (b) optical centre (c) infinity (d) twice the distance of focal length

13) A convex mirror is used -
(a) by dentists (b) for shaving (c) as a rearview mirror in vehicles (d) as a light reflector for obtainning a parallel beam of light.

14) Which remains unaltered when light rays enter from one medium to another medium?
(a) velocity (b) frequency (c) wavelength (d) direction of propagation

15) Head light of car uses -
(a) plane mirror (b) Convex mirror (c) Concave mirror (d) Convex lens

16) The image formed in the retina of human eye is -
(a) virtual and erect (b) virtual and inverted (c) real and inverted (d) real and erect

17) Which of the following has highest penetrating power?
(a) α ray (b) β ray (c) γ ray (d) Sun ray

18) The image formed by a convex mirror is
(a) virtual and erect (b) real and erect (c) real and inverted (d) magnified and real

19) The ratio of focal length of spherical mirror to its radius of curvature is -
(a) 0·5 (b) 1 (c) 2 (d) 3

Group - B

1) Give a natural example of dispersion of light.
2) Which type of lens can rectify myopic vision?
3) Between the angle of incidence and angle of refraction which one is greater when light travels from a rarer to denser medium?
4) What type of mirror is used in the view-finder of a motor car.
5) What will be the angle of incidence when a ray of light passes through the centre of curvature of a concave mirror?
6) How many rectangular surfaces are there in a prism?
7) Which mirror produces virtual and diminishat image?
8) In a particular medium, angle of incidence of light is 45° and angle of refraction is 30°. What will be the refractive index of that medium?
9) When light goes from water to glass there what type of change occurs in its velocity?
10) What will be the change in focal length of a convex mirror when it is immersed within water?
11) What change is occurred in focal length of eyelens for a person suffered from myopic vision?

True or false

12) Focal length of a lens depends on its surrounding medium.
13) For what value of angle of incidence, Snell's law is not applicable
14) What is the cause of refraction of light?
15) What is the range of normal eyesight?

16) Write the condition of minimum deviation of ligth ray in prism.

Group-C (2 marks each)

1) How does the refractive index of a medium depend on the velocity of ligth?

OR

What kind of mirror is used in the headlight of a car and wh

2) What is meant by optical centre of a convex lens?

OR

Why does earth's sky appear blue during day time?

3) What is the refractive index of a medium?

OR

Which type of defect of vision is rectificed by a convex lens?

4) How do you form a virtual and magnified image by a Concave mirror?

OR

Arrange the following electromagnetic waves by their increasing order of wavelength: Infrared ray, ultraviolet ray, Microwave.

5) Define optically denser and rarer medium

6) In case of a Concave mirror, establish the relation $f = \frac{v}{2}$ (notations have their usual meaning).

7) How would you identify if a lens is convex or Concave?

8) The incident angle of a light ray is 30°. The angle between reflected ray and refracted ray is 90°. What is the value of angle of refraction?

Group-D (3 marks each)

1) State the two laws of refraction of light? Write also the mathematical form of the second law.

2) In case of a concave mirror find the relation between focal length and radius of curvature.

3) How can an erect and magnified image be formed with help of a convex lens? With the help of which type of lens, long-sightedness can be rectified?

4) If the velocity of light in a medium is 2×10^8 m/s, what will be the refractive index of that medium?

5) What type of mirror is used by the dentists? Why a ray of light does not deviate as a result of refraction through a glass slab?

6) The refractive index of a medium with respect to air is $\sqrt{2}$. If the angle of incidence of a ray of light in air is 45° determine the angle of deviation for that ray in case of refraction.

7) When an object is placed 20cm away from a convex lens, no image is obtained on either side of the lens. What is the focal length of the lens?

If the refractive index of glass with respect to air is 1.5, what is the refractive index of air with respect to glass?

OR

The length of an object is 5cm. An image of 10cm is obtained when it is placed at a distance of 2cm infront of a convex lens. What is the linear magnification and image distance?

8) Define optical centre of a lens. Which type of lens is there in human eye?

9) A light ray falls on a glass block in such a way that angle between reflected and refracted ray is 90°. Find the relation between angle of incidence and refractive index of a glass.

CLAPTER – 6

Current Electricity

Current Electricity

Group-A

Multiple choice questions

1) The no. of electrons that carry 1 coulomb of electricity is-
(a) 1.6×10^{-19} (b) 4.8×10^{-10} (c) 6.25×10^{18} (d) 6.023×10^{23}

2) Two conductors with same potential difference has the ratio of electricity flowing through them 1:3 the ratio of their resistance is
(a) 3:1 (b) 1:3 (c) 2:1 (d) 1:2

3) The SI unit of potential difference is-
(a) volt (b) ohm (c) Amphere (d) coulomb

4) According to the international convention colour of Line Wire is-
(a) red (b) green (c) brown (d) blue

5) The unit of electric charge is-
(a) volt (b) coulomb (c) ohm (d) Ampere

6) According to the international convention the colour of neutral wire is
(a) red (b) brown (c) green (d) blue

7) The SI unit of electric current is-
(a) Coulomb (b) ampere (c) volt (d) ohm

8) According to the international convention, colour of Earth Wire is-
(a) blue (b) red (c) orange (d) green or yellow

9) Coulomb the unit of electric charge is expressed as-
(a) ampere x sec (b) $\frac{\text{ampere}}{\text{sec}}$ (c) volt x ampere (d) volt x Sec

10) The mathematical expression of ohm's law is-
(a) $I = VR$ (b) $V = IR^{-2}$ (c) $VI^{-1} = R$ (d) $V = I^{-1}R^{-1}$

11) The colour of neutral wire according to international convention is-

(a) brown (b) green (c) blue (d) red

12) One ~~Amph~~ Ampere is equivalent to -
(a) 10^{-6} μ amp (b) 10^{6} μ amp (c) 10^{8} μ amp (d) 10^{10} μ amp

13) In D.C dynamo AC current is Converted to D.C
(a) Commulator (b) slip ring (c) magnetic strip (d) coil of wire.

14) The no. of slip rings in AC dynamo is -
(a) 2 (b) 3 (c) 4 (d) 0

15) SI unit of resistance is -
(a) Coulomb (b) volt (c) ohm (d) ampere

Group-B

1) On which factor resistance depends?
2) Name one semi-conductor?
3) Write the relation between Coulomb and ampere.
4) True or False
Solenoid is a producer of electric current
5) What does the ring finger denotes in Flemming left hand rule?
6) express 1HP in Watt
7) What is BOT
8) Name one instrument that workes on heating effect of electricity
9) True or False
Fuse wire should have high resistance
10) Name the constant of ohm's law.

Group-C

1) State Coulomb's law and give the mathematical expression.
2) Two resistances 2 ohm each are connected in parallel. Calculate the equivalent resistance.

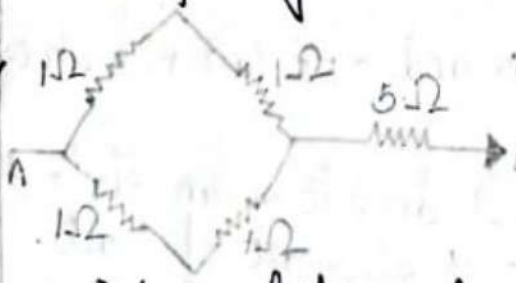
3) What is specific resistance? Give mathematical expression

4) Write two differences between potential difference and emf of a cell:

5) What is solenoid? Write its use.

6) What current in milliampere must be passed through a resistance of 100 Ω so that the potential difference is 1volt?

7) Two Copper Wires of same cross-sectional area has ratio of length 1:2, Calculate the ratio of resistance?

8) 

Calculate the equivalent resistance between A and B

9) Which one is an intrinsic property: resistance or specific resistance? Name one factor on which specific resistance depends.

10) How the rotation of Barlow's wheel will be affected if-
(i) current is increased
(ii) Magnetic poles are reversed.

Group-D

(1) In a house, 4 lamps of 100 W and 2 ~~fans~~ fans of 160 W run for 5 hrs a day. If the cost of one unit of electricity is Rs 10 then calculate the total cost of electricity in a month of 30 days.

2) What is induced current? Write Faraday's laws of electromagnetic induction.

3) With mathematical expression Write Joule's law of heating effect of electric current

4) State Flemmings that hand rule and draw labelled diagram.

5) Write Lenz's law. How it complis with law of conservation of energy.

6) Write two differences between AC and DC generator. Write the function of commutator in DC generator.

7) If 5 ampere current is flown through a resistance of 42 Ω what be will be the heat produced in calorie? Write one characteristic of fuse wire

8) Two resistances when connected in series gives 25Ω and 6Ω when connected in parallel. What are the resistances?

9) Write two differences between LED and CFL lan which one is more chemical to use?

10) A bulb has label 220V-100V. What does it mean state the characteristics of the filament of element of bulb.

CLAPTER – 7

Atomic Nucleus

Atomic Nucleus

Group - A

Multiple choice questions

1) Which of the following is the correct order of ionising power for α, β and γ rays?
(i) $\alpha > \beta > \gamma$ (ii) $\alpha > \gamma > \beta$ (iii) $\gamma > \beta > \alpha$ (iv) $\beta > \alpha > \gamma$

2) The relation between the Coefficient of linear expansion (α), superficial expansion (β) and volume expansion (γ) of a solid is-
(i) $\alpha = \beta = \gamma$ (ii) $\alpha = 2\beta = 3\gamma$ (iii) $\alpha = \frac{\beta}{2} = \frac{\gamma}{3}$ (iv) $\alpha = \frac{\beta}{3} = \frac{\gamma}{2}$

3) If α is the coefficient of linear expansion of metal, then coefficient volume expansion will be
(i) $\frac{\alpha}{3}$ (ii) $\frac{\alpha}{2}$ (iii) 3α (iv) 2α

4) If the coefficient of linear expansion of solid is α and coefficient of volume expansion is γ, then-
(i) $\gamma = \frac{\alpha}{3}$ (ii) $\alpha = \frac{\gamma}{3}$ (iii) $\alpha = \frac{\gamma}{2}$ (iv) $\gamma = \frac{\alpha}{2}$

5) Arrange α, β, γ according to their masses -
(i) $\alpha < \beta < \gamma$ (ii) $\alpha > \beta > \gamma$ (iii) $\beta < \alpha < \gamma$ (iv) $\alpha > \beta > \gamma$

6) Which of the following particles are emmited successfully during radioactive change to form isotopes?
(i) $2\alpha, 2\beta$ (ii) $1\alpha, 2\beta$ (iii) $2\alpha, 1\beta$ (iv) $1\alpha, 1\beta$

7) Which of the following is the correct order of decreasing power of ionisation of gas? (α, β, γ are radioactive rays)
(i) $\alpha > \beta > \gamma$ (ii) $\gamma > \beta > \alpha$ (iii) $\alpha > \gamma > \beta$ (iv) $\gamma > \alpha > \beta$

8) If an alpha particle is emmitted then the atomic no. of newly formed element will-
(i) increase by 1 (ii) decrease by 1 (iii) increase by 2 (iv) decrease by 2

9) Which has the greatest mass?
(i) beta (ii) alpha (iii) gamma (iv) mass of (a), (b), (c) is equal.

10) The velocity of which is the heghest?
(i) alph (ii) beta (iii) gamma (iv) the velocity of (a), (b), (c) are equal.

Group-B

1) Arrange α, β and γ rays in ascending order of their penetrating power.

2) From which part of a radioactive atom is β particle emited?

3) What is the charge of x ray?

4) What type of nuclear reaction takes place inside the Sun of the stars?

5) Can x ray ionise gases?

6) Which energy is converted electrical energy in nucles reactor?

7) What do you understand by 1 curie radio activity?

8) What is the effect to temperature and presssure on radioactivity?

9) If an alpha particle is emmited from ^{238}U then what will be the mass no and atomic no of the ^{92} produced element?

10) The charge of which α, β, γ is Zero?

Group-C
Short type questions

1) Why is nuclear radioactivity called a nuclear phenomenon?

2) Give the comparison of nuclear fission and nuclear fusi

3) How can nuclear fission be utilised for [illegible]?

4) What is the difference between a β particle and an electron?
5) What are moderators?
6) α rays do more damage than β rays why?
7) What are the difference between x rays and γ rays?
8) Between fission and fusion reaction which one is prefer for energy production?
9) Mention the properties of invisible rays emitted from radioactive elements?
10) Mention peaceful use of nuclear energy?

Group-D
Long Answer type

1) Radioactivity is a nuclear phenomenon? Explain
2) Compase the following properties of α, β and γ ray?
(i) Penetrating power (ii) Ionisat of gas (iii) charge (iv) effect of electric and magnetic field
3) Why energy is released in nuclear fission reaction?
4) Mention some merits and demerits of use of nuclear energy?
5) Define mass defect and nucles binding energy?
6) Give properties of α, β and γ ray?
7) Why is a new element having an atomic no lu more formed but the mass no remains same if a beta particle is emitted?
8) Write the differences between radioactive change and chemical change?
9) What is nuclear binding energy? Calculate what amount of energy will be released if lu mass is converted into energy?

10) ${}^{a}_{b}X \xrightarrow{-a} Y \xrightarrow{-2\beta} Z$, Mention atomic no and mass no. of Y and Z. what is the relation between X and Z?

CLAPTER – 8.1

Periodic Table

Periodic Table and Periodicity of properties of the elements.

GROUP-A

Multiple choice questions

1) To which group of the long periodic table do the halogen elements belongs?
(a) group 1 (b) group 16 (c) group 17 (d) group 2

2) Who gave the idea of modern periodic table?
(a) Mendelev (b) Bohr (c) Lothar Meyer (d) Moseley

3) Which of the following property of the element is not periodic?
(a) density (b) melting point (c) reducing power (d) radioactivity.

4) Mention the periodic position of element whose atomic number is 20.
(a) 2 (b) 3 (c) 4 (d) 5

5) The correct order of atomic radii of Li, Na and K is
(a) Na > Li > K (b) K > Na > Li (c) Li > Na > K (d) Li > K > Na

6) The strongest oxidising element is
(a) F (b) Cs (c) Cl (d) H

7) Along a period ionisation energy is maximum in
(a) Alkali metals (b) halogens (c) transition metals (d) noble gases.

8) Which one is alkali metal group?
(a) IA (b) IIA (c) VIIB (d) 0

9) How many groups are there in long periodic table?
(a) 7 (b) 8 (c) 9 (d) 18

10) Which one is the g. most electronegative element among the following?
(a) Na (b) K (c) Rb (d) Cs

1) Long form of periodic table is based on
(a) atomic mass (b) atomic number (c) number of neutrons
(d) none of these

Group-B
Very short type questions

2.1) Match the right column with the left column

Left Column	Right Column
2.1.1) Group 1 element of the long periodic table having the least reducing property.	(a) Be
2.1.2) Group 2 element of the long periodic table having least atomic radius.	(b) Li

2.2) Match the right column with the left column

Left Column	Right Column
2.2.1) Meaning of halogen	(a) Bromine
2.2.2) Liquid non-metal	(b) Salt Producer

.2) Match the right column with the left column

Left Column	Right Column
2.3.1) Radioactive noblegas	(a) F
2.3.2) Most electronegative element	(b) Rn

2.4) Match the right column with the left column

Left Column	Right column
2.4.1) Solid Halogen element	(a) Fluorine
2.4.2) Strongest electronegative element	(b) Iodine

2.5) Match the right column with the left column

Left Column	Right column
2.5.1) Alkaline earth metal	(a) Cu
2.5.2) Coinage metal	(a) Ca.

2.6) Arrange the elements with decreasing order of their atomic size: O, C, F, Li.

2.7) Match the right column with the left column:

Left Column	Right Column
2.7.1) Rare earth metal	(a) Cl
2.7.2) Halogens	(b) Lu

2.8) Match the right column with the left column

Left Column	Right Column
2.8.1) An alkali metal	(a) F
Halogens	(b) K

2.9) Why do elements other than noble gases have tendency to combine with each other?

2.10) Match the right column with left column

	Left Column	Right column
2.10.1)	The most electronegative element of group 17	(a) Mg
2.10.2)	An alkali earth metal	(b) F

Group-C

Short type questions

1) Which one is more stable between Na and Na^+ and why?

2) Give two reasons for placing hydrogen in group 1 in the periodic table.

Group-D

Long type questions

1) Write down Dobereiner's law of triads. Arrange Cl, Br, I, F in increasing order of their oxidising power. OR, What is the important Conclusion of Moseley's experiment? What is the important of his Conclusion in regard to periodic table?

2) What is noble gas or inert gas? Why are they called inert and bridge element?

3) Write Mendeleev's periodic law. What do you mean by period and group in periodic table?

OR

Mention one similarities between the properties of hydrogen with group 1 elements and the similarities with group 17 elements.

4) Why is the radius of Ca^{2+} ion less than K^+ ion? Compare the electron affinity between F and Cl.

OR

Write down two drawbacks of Mendeleev's periodic table. How those drawbacks are overcome in modern periodic table?

5) The atomic number of two elements x and y are 11 and 17 respectively.

(a) find the position of the elements in long form of periodic table.

(b) Write down the valencies of x and y

(c) Which type of bond will be formed when x and y react with each other.

OR

Why is hydrogen called 'rogue element'? Write down a property which is non-periodic.

6) Give the definition of electronegative. The atomic number of the element A, B, C and D are 3, 9, 11 and 17 respectively? Which are the most electronegative and electropositive among them?

OR

Difference between ionic and covalent compounds (any three). Why He_2 molecule is not formed?

7) An element 'Z' having atomic no. 16 belongs to which period and group in the periodic table? State whether the element is a metal or non-metal.

OR.

How does atomic radius change along a period from left to right? Give reason.

8) Define alkali earth element. What is produced by them during ~~real~~ reaction with water? How does the atomic radius change along the period?

OR

Give two reasons in support for keeping hydrogen in the

1st group and one reason against of it.

9) What is meant by ionisation energy of an element? Arrange Li, Pb, K and Na in the increasing order of their ionisation energy?

OR

Mention one similarity of hydrogen with group 1 elements and two similarities with group 17 elements.

10) The 7a elements of the third period of the periodic table are given below:

Group →	I	II	III	IV	V	VI	VII
	Na	Mg	Al	Si	P	S	Cl

(I) Which one is bigger - Na or Mg and why?
(II) Identify the most (a) metallic and (b) non-metallic element in the period?
(III) Which one is most electropositive element in the period 3?

11) What is meant by electronegativity of an element? How does electronegativity of group 1 elements of long periodic table change from top to bottom?

OR

Mention a property which is not periodic, Arrange Li, Rb, K and Na in increasing order of their ionisation energy and explain.

CLAPTER – 8.2

Ionic Bond and Covalent Bond

Ionic and Covalent bonding

GROUP - A

Multiple choice questions

1) Solid state of which of the following compounds is composed of ions?
(a) Sodium chloride (b) hydrogen chloride (c) naphthalene (d) glucose

2) Which of the following contains a covalent bond?
(a) HCl gas (b) LiH (c) CaO (d) NaCl

3) The covalent compound used in our daily life is
(a) Water (b) Washing soda (c) alum (d) chalk

4) What type of bond is present in nitrogen molecule?
(a) ionic bond (b) Covalent single bond (c) Covalent triple bond (d) Covalent double bond.

5) Which one is not a property of an ionic compound?
(a) generally solid material (b) very high melting and boiling point (c) low density (d) highly soluble in water

6) In aqueous solution of which acid both ions and molecules are present?
(a) Sulphuric acid (b) hydrochloric acid (c) nitric acid (d) acetic acid.

7) Number of covalent bond present in nitrogen molecule is -
(a) 1 (b) 2 (c) 3 (d) 4

8) In formation of which of the following compound ~~octet~~ octet rule is not obeyed?
(a) NaCl (b) LiH (c) KCl (d) CaO

9) Which of the following is not a property of ionic bond?
(a) loss of electron (b) gain of electron (c) sharing of electron.

Group-B
Very short answers

1) Draw the lewis dot structure of N_2 molecule (atomic numbe of N is 7)
2) What type of chemical bond is present in mgo?
3) Write down the name of a covalent compound which condu cts electricity in aqueous solution?
4) Mention which one is ionic and which one is covalent Comp- ound between CaC_2 and CCl_4
5) Which type of compound has low melting and boiling poi
6) What type of chemical bond is present in cao?
7) The covalent radius of nitrogen is ~~70~~ 70 pm. Hence Covalent radius of boron is about 60pm (State whether the above statement is true or false)
8) What type of chemical type of chemical bond is present in NH_3?
9) Give an example of a positively charged non-metallic ion

Group-C
Short answer type

1) How did Kossel explain the formation of ionic bond?
2) Distinguish between sodium chloride and napthalene by tw Physical properties:
3) Covalent compunds have low boiling point and low melting point. Why?
4) Sugar and glucose are covalent compounds. Both of them get dissolved in water. Why?
5) What do you mean by octet Rule?
6) Why is it appropriate to use the term formula weight instead of molecular weight in case of sodium chloride?
7) A is a metal and x and y are two highly electronegative non-metals. If they form AY and XY compounds then

mention which one will be electrovalent and which one will Covalent Compound.

8) The element x has an atomic number 7 when two atoms of x form a molecule, mention whether the bond be covalent or electro-Covalent? Give the electron dot structure of the molecule.

9) Why are the ionic crystals brittle?

10) Write with an example how covalent bond is ~~go~~ formed according to Lewis concept?

. Which one is more stable NO or Na^+? Why?

11) Name two covalent compounds which are used in everyday life?

12) Write two difference between ionic & compound and covalent compound.

13) Explain how does Lewis explain covalent bond formation.

14) Why sodium ion (Na^+) can be kept in water or in a solution but sodium atom (Na) cannot be kept in water?

15) Write down the Lewis dot structure of CCl_4 and mention the nature of the compound?

16) Why the bond NaCl cannot be expressed as Na-Cl?

17) Give an ~~exple~~ example each of a liquid and a solid Covalent compound.

18) "Covalent bonds ~~are~~ are directional bonds while ionic bonds are non-directional" - explain with reason.

19) The electronic configuration of three elements A, B and C given below: A - $1s^2\ 2s^2\ 2p^6$, B - $1s^2\ 2s^2\ p^6\ 3s^2\ 3p^3$, C - 15 $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^3$

(i) What are the stable forms of A and C

(ii) What is the formula of compound formed from B and C?

20) Draw lewis dot structure of water molecule

21) Why the bond in Sodium chloride can't be expressed as NaCl?

22) Name a compound with formula which is covalent in gaseous phase.

23) Differentiate between ionic and covalent compounds (any three)

Why He_2 molecule is not formed?

24) NaCl does not conduct electricity in solid state, but in aqueous solution or fused state it conducts electricity. Why?

CLAPTER – 8.3

Electricity & Chemical Reactions

Electricity and chemical reaction

Group-A

Multiple choice questions

1) Which of the following has the highest ability to conduct electricity?
(a) Pure water (b) Aqueous solution of Sugar (c) Liquid hydrogen chloride (d) Aqueous Solution of acetic acid.

2) Which of the following conducts electricity?
(a) CaO (b) CH_4 (c) ~~C_2H_2~~ C_2H_4 (d) C_2H_2

3) Iron key is to be coated with copper. Here the cathode used in
(a) Carbon rod (b) copper plate (c) Iron key (d) Nickel rod.

4) The reaction takes place at anode during electrolysis is
(a) oxidation (b) reduction (c) replacement (d) none of these

5) Which conducts ~~electri~~ electricity in an electrolytic Solution?
(a) electron (b) proton (c) neutron (d) ion

6) Electrolysis is one type of
(a) addition reaction (b) neutralisation reaction (c) oxidation-reduction reaction (d) Substitution reaction

7) The carriers of current within electrolyte during electrolysis is
(a) electron (b) proton (c) X-ray (d) ions

8) Which gas is released in cathode be the time of electrolysis of water?
(a) O_2 (b) H_2 (c) CO_2 (d) None of these

9) Which one is not a strong electrolyte?
(a) NaCl (b) NaOH (c) NH_4OH (d) KNO_3

10) Amount of copper present in brass is
(a) 30% (b) 40% (c) 70% (d) 0%

11) Which of the following can Conduct electricity?
(a) molten NaCl (b) Liquid HCl (c) Solid NaCl (d) aqueous solution of glucose.

12) Which of the following is a strong electrolyte?
(a) Lactic acid (b) Citric acid (c) Acetic acid (d) muriatic acid

Group - B
Very short questions

1) Which kind of electricity is used in electrolysis?
2) Write down the cathode reaction in the electrolysis of acidulated water using platinum electrode.
3) In electroplating gold on brass, what is electrolyte used?
4) Which acid is mixed for electrolysis of water?
5) Give example of a compound whose aqueous solution is a weak electrolyte?
6) Which are the carriers of electricity during the electrolysis of a ~~aqueous~~ aqueous solution of an electrolyte?
7) What is used as cathode in the electroplating of iron spoon with nickel?
8) Write down the reaction taken place at cathode in the electrolysis of $CuSO_4$ solution using Cu electrode.
9) Which mixture is used as electrolytic solution during electroplating by gold?
10) At which electrode oxidation reaction takes place during electrolysis?
11) Which metal present in anode mud is insoluble in concentrated nitric acid?
12) What is the volumetric ratio of the gases produced at anode and cathode during electrolysis of water?
13) What are used as cathode and anode in copper purification?
14) What is used as electrolyte in aluminium extraction from aluminium.
15) Reaction takes place in an electrode is:
$Cu \rightarrow Cu^{2+} + 2e^-$. At which electrode (anode or cathode)

would such a reaction take place.

16) Write down the cathode reaction for extraction of aluminium by the process of electrolysis?

17) Write down one difference between electrolyte and non-electrolyte.

18) Which type of change takes place in the electrolysis process- physical or chemical?

19) Write name of two metals present in anode mud.

20) What is used as cathode to electroplate silver over a Cu spoon?

21) Give example of a compound whose aqueous solution is a weak electrolyte.

22) During electrolysis which electrode is called cathode?

23) Give an example of salt that is a weak electrolyte?

24) Which electrolyte is used for electroplating with silver?

25) Which is used as cathode to electroplate, gold over a copper spoon?

26) Which ion migrate towards the cathode during the electrolysis of aqueous solution of $CuSO_4$ using Cu electrodes?

Group-C
Long questions.

1) Write two differences between the conduction of electricity through a metallic wire and et an electrolyte during electrolysis. In electrolysis refining of copper metal, impure copper rod is used as which ~~electrode~~ electrode?

2) What is anode mud? Write its importance?

3) If iron spoon is to be electroplated by silver then which are to be used as cathodex, anode and electrolyte?

4) Mention the chemical reactions occured in cathode and anode during electrolysis of acidified Waters. Why electrolysis does not occur in aqueous solution of sugar

5) On what factors the electrical conductivity depend in an electrolytic substance? Write down the equations of reactions taken place at the electrodes in case of ~~electri~~ electrolysis of aluminium

6) Which electrolyte is used to extract aluminium by electrolysis method? Write down the equations occured at cathode and anode in this case.

7) Is there any change occured in density of $CuSO_4$ solution during electrolysis using Cu electrode? Explain.

8) What is the neccessity of electroplating? What substances are used as cathode, anode and electroyle during electroplating of Silver on brass?

9) Show the reaction takes place at cathode and anode during electrolysis of $CuSO_4$ using Cu electrode. Mass of which electrode is being reduced in this case?

10) What substances are present along with pure alumina in the molten mixture which is electrolysed for the extraction of Al by electrolysis? What are used as cathode and anode in this electrolysis?

11) (i) What would happen if in the electrolysis of acidified water, Cu electrodes were used instead of Pt ones?
(ii) Write the equations at both electrodes when fused NaCl is electrolysed?

CLAPTER – 8.4

Inorganic Chemistry

Inorganic chemistry in the laboratory and in industry

Group-A

Multiple choice questions

1.1) For preparation of Ammonia gas in laboratory ammonium chloride and slaked lime is mixed in ratio.
(a) 1:2 (b) 1:3 (c) 2:1 (d) 3:1

1.2) Ammonia gas is dried by sending through tower of -
(a) CaO (b) $CaCO_3$ (c) $CaCl_2$ (d) P_2O_5

1.3) Ammonia is liquified at a temperature of -33.41°c at
(a) Normal pressure (b) Low pressure (c) High pressure
(d) very high pressure

1.4) Ammonia has the following property
(a) Brown colour and no smell
(b) Colourless and no smell
(c) Colourless and strong pungent smell
(d) Brown colour and strong pungent smell

1.5) A dense fume is created when ammonia gas reacts with Hydrogen chloride. This fume is due to production of
(a) Ammonium nitrate (b) Ammonium Sulphate (c) Ammonium chlorate (d) Ammonium Chloride.

1.6) When aqueous solution of ammonia is added to aluminium chloride solution, a white gelatinous precipitate of
(a) Ammonium hydroxide (b) Aluminium hydroxide (c) Aluminium oxide (d) Ammonium nitrate is obtained.

1.7) Red litmus shows which colour in contact with ammonia?
(a) Red (b) Blue (c) White (d) Green

1.8) Nature of ammonia is
(a) Basic (b) Acidic (c) Neutral (d) none of (a), (b), (c)

1.9) When ammonia leakage occurs the precaution is which of following type?
(a) Face may be covered with wet thick cloth or towels
(b) Face and eye should be washed by acid
(c) Face and eye should be washed by alkaline solution
(d) None of (a), (b), (c)

1.10) Industrial manufacture of ammonia is done be
(a) Ostward process (b) Haber's process (c) Nitrification process (d) Contact process

1.11) Kipp's apparatus is used for preparation of
(a) Hydrogen Sulphide (b) Ammonia (c) Nitrogen (d) Oxygen.

1.12) A colourless and odourless gas is
(a) H_2S (b) NH_3 (c) NO_2 (d) N_2

1.13) Which of the following acids are produced when NO_2 reacts with rain water?
(a) Nitric acid and Nitrous acid.
(b) Sulphuric acid
(c) Hydrochloric acid
(d) Hydrogen Sulphide

1.14) Aerial nitrogen is fixed in soil in the form of
(a) Nitric acid (b) Nitrous acid (c) Nitride (d) Nitrate

1.16) In the Le Blanck process of industrial manufacturing of hydrochloric acid which of the following is used.
(a) Mixture of common salt and sulphuric acid
(b) Mixture of common salt and nitric acid
(c) Mixture of common salt and water
(d) Mixture of sugar and sulphuric acid

1.17) In the ostwald process of preparation of nitric acid which of the following is used as catalyst?
(a) Tin (b) Magnesium (c) platinum (d) Iron.

1.18) King of chemistry is called
(a) Nitric acid (b) Hydrochloric acid (c) phosphoric acid (d) Sulphuric acid.

1.19) Aqua forties ~~of~~ is called
(a) Nitric acid (b) Hydrochloric acid (c) phosphoric acid.

1.20) Which of the following is used as catalyst in contact process for ~~pe~~ preparation of sulphuric acid.
(a) Platinum wire (b) Granite (c) Magnesium guage (d) vanadium pentoxide

1.21) Oleum is
(a) pyrosulphuric acid (b) Nitric acid (c) Hydrochloric acid (d) Nitrus acid

1.22) During contact process of sulphuric acid preparation sulphur dioxide is oxdized to
(a) Sulphur (b) sulphur dioxide (c) Sulphur oxide (d) Sulphur trioxide.

Group-B
Very Short type questions

2.1) What is the ratio of Ammonium chloride and dry quick lime for production of Ammonia?

2.2) Mention a chemical for drying of Ammonia.

2.3) If ammonia reacts with sulphuric acid what is the product?

2.4) Mention the name of a chemical used a refrigerant?

2.5) Why a large quantity of water is used in case of ammonia leakage?

2.6) What catalyst is used in Haber process of ammonia preparation

2.7) Which is an essential chemical for preparation of nitrogen containing fertilizers?

2.8) Mention the principle of Hydrogen sulphide preparation.

2.9) Name a chemical of drying of H_2S

2.10) Which gas is identified by Nessler's reagent?

2.11) Give an example of non-aqueous solvent.

2.12) Which oxide of Nitrogen creates a brown gas in contact of oxygen?

2.14) What is the optimum pressure for industrial manufacture of Ammonia?

2.15) What is nitrolim?

2.16) How the Hydrochloric acid is prepared from Hydrogen chloride gas?

2.17) What is oleum

2.18) What is royal water?

Fill in the blanks

2.19) Concentrated aqueous solution of ammonia is called _____

2.20) A bottle of Liquor ammonia should be opened after _____

2.21) $2Na + 2NH_3 = 2NaN_2 +$ _____

2.22) Urea is good nitrogen containing _____

2.23) Liquid nitrogen boils at _____

2.24) Nitrogen is an _____ element at ordinary temperature

2.25) Nessler's reagent is the alkaline solution of _____

2.26) _____ gas is heavier than air.

2.27) _____ is soluble in cold water, but practically insoluble in hot water

2.28) When Ammonium hydroxide is added to yellow ferric chloride solution a brown precipitate of _____ is obtained.

2.29) In presence of excess oxygen Hydrogen Sulphide burns with _____ flame

2.30) During Lightning, nitrogen in atmosphere combines with aerial oxygen to form _____

2.31) _____ is used as catalyst in contact process ~~for~~ for preparation of Sulphuric acid.

2.32) Oleum is diluted in water to produce _____ of suitable strength.

2.33) Red hot magnesium reacts with nitrogen to form _____

2.34) 100% oleum is called _____

Mention True / False

2.35) Ammonia is dried by using lime.

2.36) Ammonia has a strong pungent smell

2.37) Haber process is carried at 550°C and 200 atm.

2.38) Ammonia is lighter than air.

2.39) Concentrated sulphuric acid cannot be used to make ammonia.

2.40) Phosphorus pentoxide cannot be used for drying of ammonia.

2.41) Ammonia is highly soluble in water

2.42) Ammonia is not injurious to eye.

2.43) Example of Ammonia as a reducing element is

$$2NH_3 + 3CuO = 3Cu + 3H_2O + N_2 \uparrow$$

2.44) Liquid ammonia is not used as a refrigerant

2.45) Hydrogen sulphide is a weak dibasic acid.

2.46) Hydrogen sulphide is a weak reducing agent.

2.47) Hydrogen sulphide is a poisonous gas above 0.1% concentration

2.48) ~~To~~ Platinum, asbestos are used as catalyst in case of Contact process of H_2SO_4 preparation.

2.49) Planium gauge is used as catalyst for Ostwald process of nitric acid preparation.

2.50) Calcium cyanamide and carbon make a grey mixture called oleum

2.51) Oleum is furning sulphuric acid.

2.52) A hot water vapour and chlorine when passed through activated charcol, hydrochloric acid is produced

2.53) During electric spark nitrogen and oxygen react to form nitric oxide at 3000°C

2.54) Nitro lim is used as a fertilizer.

Match both side

Left	Right
2.55) Nessler's reagent	(a) Liquid ammonia
2.56) Refrigerant	(b) Sulphuric acid
2.57) Chemical fertilizer	(c) $K_2[HgI_4]$
2.58) Oil of vitriol	(d) Ammonium sulphate.

Group-C
Short type questions

3.1) Which materials are used for preparation of Ammonia?
3.2) Why lime is used for drying Ammonia but not concentrated sulphuric acid?
3.3) How will you get Nitric oxide from Ammonia?
3.4) What are the colours of $Fe(OH)_3$ and $Al(OH)_3$?
3.5) Mention some properties of Ammonia.
3.6) What do you mean by Liquor Ammonia? What is the difference between Liquid Ammonia and Liquor Ammonia?
3.7) Mention a reducing property of Ammonia?
3.8) How we can prove the existence of Hydrogen in Ammonia?
3.9) During accidental leakage of Ammonia what are the precautions and why?
3.10) Mention two uses of Ammonia
3.11) Write the conditions of manufacture of urea.
3.12) Mention the chemicals used to prepare Hydrogen sulphide.
3.13) Mention two properties of Hydrogen sulphide?
3.14) Show that H_2S is a dibasic acid:

3.15) Give an example of reduction property of Hydrogen sulphide.

3.16) Which chemicals are required for the preparation of Nitrogen?

3.17) Why nitrogen is not prepared by heating Ammonium nitrite directly?

3.18) Give two physical properties of Nitrogen gas

3.19) Why Nitrogen gas is an inert element at ordinary temperature?

3.20) Give the principle of contact process for preparation of sulphuric acid.

3.21) Why the name 'contact' is used in Contact process?

Group-D
Long type questions

4.1) Mention the principle, equation and collection in case of Ammonia preparation.

4.2) Write the (i) raw material, (ii) Condition, (iii) equation of reaction in Haber's process of ammonia preparation.

4.3) Mention the reactions of urea preparation. Mention a use of urea.

4.4) Mention (i) chemicals (ii) principle (iii) equation of reaction for preparation of Hydrogen sulphide

4.5) Mention (i) chemicals (ii) principle and (iii) collection for preparation of nitrogen gas.

4.7) Briefly describe the process of industrial manufacturing of Hydrochloric acid.

4.8) Briefly describe the process of industrial manufacturing of Nitric acid by Ostwal process.

4.9) Briefly describe the contact process for the preparation of sulphuric acid.

4.10) What is nitrolim? Mention its preparation and use

CLAPTER – 8.5

Metallurgy

Metallurgy

Group-A

Multiple choice questions

1.1) Which one of the following is the ore of iron?
(a) Red haematite (b) Bauxite (c) Malachite (d) Calamine

1.2) Which one of the following is the ore of zinc?
(a) Cryolite (b) Azurite (c) Magnetite (d) Zincite

1.3) Iron is normally used in which ways?
(a) One (b) Two (c) Three (d) Four

1.4) Most important alloy of iron is
(a) Cobalt steel (b) Invar (c) Manganese steel (d) Stainless steel

1.5) Some ~~m~~ ores of copper are
(a) Calamine, Malachite, Siderite
(b) Gibbsite, Cryolite, Copper glance
(c) Copper pyrites, Calamine, Copper glance
(d) Copper pyrites, Copper glance, Malachite

1.6) Some metals are available in free state due to
(a) Low density (b) High (c) Low activity (d) High activity.

1.7) For extraction of metals from ore in Thermite process is used in case of
(a) High electronegative elements
(b) High electropositive elements
(c) Transition elements
(d) Hydrogen

1.8) In the activity series the metal just above the hydrogen is
(a) Hg (b) Pb (c) Sn (d) Cu

1.9) The process of extraction of metal for metals at higher positions of activity series is
(a) Carbon reduction
(b) Reduction by hydrogen
(c) Self-reduction
(d) Electric reduction

1.10) Extraction of metal from its ~~oe~~ ores is
(a) oxidation (b) Reduction (c) Rusting (d) Melting

1.11) Which of the following metals to use
(a) Aluminium (b) Iron (c) Zinc (d) Copper

1.12) Which of the following metals is used for wrapping cigarettes, chocolates and medicines?
(a) Iron (b) Aluminium (c) Copper (d) Silver

1.13) Which one is not an ore of iron?
(a) Iron pyrites (b) haematite (c) Magnetite (d) None of the a, b, c

1.14) Magnelium is an alloy of
(a) Iron (b) Copper (c) Aluminium (d) Zinc

1.15) Percentage of Silver in German Silver is
(a) 5% (b) 10% (c) 20% (d) 0%

1.16) The name of the alloy alnico comes from.
(a) Aluminium, Nickel and Copper
(b) Aluminium, Nickel and Cobalt
(c) Aluminium, Sodium and Copper
(d) Antimony, Nickel and Cobalt

1.17) Which of the following metals suffers corrosion due to rust
(a) Aluminium (b) Iron (c) Copper (d) Tin.

1.18) Which of the following metals is called self protector of corrosion?
(a) Aluminium (b) Tin (c) Copper (d) Iron

1.19) Jewellery gold is the alloy of
(a) Copper and Gold (b) Aluminium and Gold (c) Zinc and Gold (d) Silver and Gold.

1.20) Which is most pure iron?
(a) Cast iron (b) Pig iron (c) Steel (d) Wrought iron

1.21) Which is extensively used for making aeroplane body?
(a) Zn (b) Cu (c) Fe (d) Al

1.22) Which alloy does not contain copper?
(a) Bell metal (b) German Silver (c) Delta metal (d) Mintoch metal

1.23) In the mechanism of rusting, iron acts as
(a) Anode (b) Cathode (c) Electrolyte (d) Reagent

1.24) In the mechanism of rusting, electrolyte is
(a) Water (b) Water with dissolved oxygen (c) Iron (d) Impurites

1.25) In cathodic protection of iron, which is anode?
(a) Iron (b) Magnesium (c) Platinum (d) H_2O

1.26) The green patches from on the surface of copper is
(a) Copper sulphate (b) Cupric oxide (c) $Cu(OH)_2$ (d) $CuSO_4 \cdot 3Cu(OH)_2$

Group-B
Very short Answer type questions

2.1) Write the name of an ore of Iron?
2.2) Write the name of a mineral of iron which is not its ore?
2.3) Name a mineral of aluminium with chemical formula
2.4) Why Kaolin is not the ore of aluminium?
2.5) What is the principle of thermite reaction?
2.6) Write the name of metals at the top and bottom of the activity series.
2.7) Name the metal just below the hydrogen in activity series.
2.8) In the thermite process what mixture is used?
2.9) What is electrolyte in the process of rusting?
2.10) Which metals used for galvanisation?
2.11) Petrolium is found under earth surface, is it a mineral?
2.12) Mention the application of thermite process
2.13) Give an example of thermite process.
2.14) Why galvanised utensils should not be used for keeping acidic fruits?
2.15) Why copper utensils should not be used for keeping acidic foods like jelly, jam etc?

Fill in the blanks

2.16) 'Metallurgy' involves the process of extraction of metal from its _____ and its refining.
2.17) All ores of a metal are its _____ too.
2.18) All minerals are _____ ores.
2.19) Hematite is ore of _____
2.20) Copper pyrites is an ore of _____
2.21) Iron pyrites is _____ ore of iron
2.22) German silver is an alloy of _____

2.23) Gun metal is used in making of _____
2.24) Reducing agent in thermite process is _____
2.25) Brass is an alloy of _____
2.26) Duralumin is an alloy of _____
2.27) Bell metal is an alloy of _____
2.28) Aeroplane body is made of alloy _____
2.29) German Silver Contains _____ Silver
2.30) Invar is an alloy of _____
2.31) Process of wasting is an _____ process
2.32) Galvanisation is a process of prevention of _____
2.33) In the cathodic protection of iron, magnesium acts as _____
2.34) In the cathodic protection of iron, iron acts as _____
2.35) By using a coating of ferrosaferric oxide (Fe_3O_4) prevention of _____ is done.

Mention True / False

2.36) Cast iron is hard and brittle
2.37) Pipe, railing, Weights, heavy machinery are made of wrought iron.
2.38) Chain, Wire, nails are made of cast iron.
2.39) Zinc is extensively used for making electric wires.
2.40) Zinc is used for galvanisation.
2.41) Aluminium is a light metal.
2.42) Aluminium is used as reducing agent.
2.43) All minerals are ores
2.44) Thermite process based on the principle that "elements having more reducing power can reduce the metal oxide to metal having lower reducing power".

2.45) In the cathodic protection of iron, iron itself acts as anode

2.46) Thermite mixture is the mixture of Fe_2O_3 and Aluminium Power (3:1).

Group-C
Short answer type questions

3.1) Give one example of ore of iron and zinc each with Symbol.

3.2) Why all minerals are not ores but all ores are minerals?

3.3) Mention the process of extraction of metals from ores.

3.4) What do you mean by carbon reduction process? Give example.

3.5) Write the principle of thermite process. Give an example of it.

3.6) For which metals, the extraction process involves the self-reduction process?

3.7) Write one application for each of Wrought iron and cast iron.

3.8) Give two applications of copper

3.9) Give two applications of zinc.

3.10) Give two applications of aluminium

3.11) Write the name of two alloys of iron.

3.12) Mention two uses of any one of the alloy of iron.

3.13) Write the name of two alloy of copper.

3.14) Mention two applications of brass.

3.15) What is rust of iron?

3.16) Mention some processes of the prevention of rust.

3.17) Give the reactions in case of rust of iron.

3.18) Why the acidic foods should not be kept in aluminium zinc and copper pots.

CLAPTER – 8.6

Organic Chemistry

ORGANIC CHEMISTRY

GROUP- A

i) Which one of the following is the functional group of aldehydes?

a) -OH , b) -CHO , c) >C=O , d) -COOH

ii) Which of the following is a saturated hydro carbon?

a) C_3H_6 , b) C_2H_4 , c) C_2H_2 , d) C_2H_6

iii) Which of the following is the alkyl group containing two carbon atoms?

a) Methyl , b) ethyl , c) propyl , d) Isopropyl.

iv) Simplest alkyne is

a) Ethylene , b) Methane , c) Acetylene , d) Ethane

v) The general formula of alkane is

a) C_nH_{2n} , b) C_2H_{2n+1} , c) C_nH_{2n+2} , d) C_nH_{2n-2}.

vi) The formula of propionic acid.

a) CH_3CH_2COOH , b) CH_3COOH , c) $HCOOH$, d) CH_3CH_2OH.

vii) Which one is not a bio-degradable polymer?

a) Starch , b) Teflon , c) protein , d) Cellulose

viii) The structure of isobutyl group in an organic compound is

a) $\begin{matrix} CH_3 \\ CH_3 \end{matrix}\!\!>\!CH-CH_2-$

b) $CH_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-CH_2-CH_3$

c) $CH_3-CH_2-CH_2-CH_2-$

d) $CH_3-\underset{\displaystyle CH_3}{\overset{\displaystyle CH_3}{\overset{|}{\underset{|}{C}}}}-$

ix) Example of alkene is

a) C_2H_6 b) C_3H_6 c) C_3H_8 d) C_2H_2

GROUP-B

i) Write down the IUPAC name of $CH_3CH_2CH_2OH$.

ii) Write down the constitutional formula of an isomer of CH_3CH_2OH.

iii) Mention one use of poly (vinyl chloride).

iv) What is the value of H-C-H bond angle in methane?

v) What is the industrial source of CNG?

vi) Write down the name of foul odured organic compound present in LPG?

vii) Write down the IUPAC name of $H_3C-CH=CH_2$

viii) What is the main constituent of denatural spirit?

ix) Write the structural formula of 2,2 dimethyl propane?
x) Give one example of functional group isomerism?
xi) Write the name of monomer of both polythene
xii) What is the monomer of teflon?
xiii) Write down the formula of vinyl chloride?
xiv) What is functional groups?
xv) Write down the functional group of formic acid
OR
What is the IUPAC name of formic acid.
xvi) Give the name of organic compound used to prepare tincture iodine.
xvii) Why coal mine explode sometimes? OR
Write down the name of biodegradable polymer?
xviii) What is the difference between propane and butane?
xix) Write down the structure of an alkene having molecular formula C_6H_{12}
xx) Write the IUPAC name of CH_3COCH_3.

GROUP - C

i) Show with the help of structural formula of ethylene that it is an unsaturated hydrocarbon.
ii) What is denatured spirit? What is its use?
iii) What is the condition of the substitution reaction of methane with chlorine? Write the balanced chemical equation of the first step of the reaction.
iv) Write with balanced chemical equation what happens when methane is burnt into oxygen.
v) Write with balanced chemical equation what happens when ethanol reacts with metallic sodium.
vi) Mention one use of each of acetic acid and ethyl alcohol.
vii) Give one example and structural formula of function group isomerism.
viii) How will you convert? $HC \equiv CH \rightarrow CH_3 - CH_3$.

ix) What is 'carbon black'? What is its use?

x) What is homologous series? Give example.
How do you convert: $C_2H_2 \rightarrow C_2H_4$?

xi) Write down name and structural formula of two organic compounds having the same molecular formula C_2H_6O.

xii) Write down two harmful affects for excessive use of polymer.

xiii) Compose the following properties of ethanol and ethanoic acid — i) Litmus test, ii) Sodium metal reaction, iii) Sodium bicarbonate test.

xiv) What happens when sodium salt of ethanoic acid is heated with soda lime (3 parts of NaOH and 1 part of CaO)? Give balanced chemical reaction.

GROUP - A

i) Write balanced chemical equation of addition reaction of hydrogen with acetylene mentioning the conditions of reaction. Mention one use of LPG

ii) The molecular formula of an organic compound is $C_2H_4O_2$. The compound is soluble in water and an addition of $NaHCO_3$ to the aqueous solution of the compound CO_2 is evolved. Identify the organic compound.

iii) Compare three properties of organic and inorganic compounds.

iv) (A) and (B) are two unsaturated hydrocarbon each containing 2 carbon atoms. On reaction with bromine, (A) adds one molecule of bromine per molecule and (B) adds two molecules of bromine per molecule and (B) adds two molecules of. Write structural formula of (A) and (B). Write balanced chemical equation of reaction of (A) with bromine.

v) Write balanced chemical equation of the reaction of sodium hydroxide with acetic acid?

Which one between jute and polythene is environment friendly for packaging and why?

vi) Identify A, B and C

$$C_2H_5OH \xrightarrow[350^\circ C]{Al_2O_3} A \begin{cases} \xrightarrow{Br_2/CCl_4} \\ \xrightarrow[25^\circ C]{H_2/Ni} \end{cases}$$

vii) At what condition, methane reacts with chlorine? Write down the equation for it?

viii) What is produced when ethanol reacts with excess of conc. H_2SO_4 at 140°C? Give the equation of reaction.

ix) How is polythene prepared from ethylene? What is rectified spirit? With respect of reaction with sodium, differentiate between ethanol and dimethyle ether.

x) Which gas is produced during the reaction between Na and ethyle alcohol at normal temperature. Write down the equation of this reaction. What is denatured spirit?