PARISHRAM PUBLICATIONS

Std.: X (English) | Science And Technology - I | Marks: 40

Date: 20-Dec-2019 | Parishram Academy | Time: 2 hrs

Chapter: All

Q.1 A) Multiple Choice Questions **(5)**

1) Which of the following process to be carried out to avoid the formation of greenish layer on brass vessels due to corrosion?

a. plating b. anodization c. tinning d. alloying

Ans. Option c.

2) With the help of ray diagram we can find ..... about the image.

a. size b. Nature c. Position d. All of the above

Ans. Option d.

3) Which type of carbon-carbon bonds are present in Vanaspati ghee?

a. Single b. double c. triple d. single-double

Ans. Option a.

4) If the refractive index of glass with respect of air is $\frac{3}{2}$, what is the refractive index of air with respect to glass ?

a. $\frac{2}{3}$ b. 1.5 c. 0.6' d. None of these

Ans. Option a.

5) A DC generator is based on the principle of ..... .

a. electrochemical induction

b. electromagnetic induction

c. magnetic effect of current

d. heating effect of current

Ans. Option b.

(B) Solve the following question **(5)**

1) Find the odd one out.

Dispersion , Mirage, Refraction, Induction

Ans. Induction - This is related to electric current and other are phenomenom of light.

2) Find co-related terms

Alkene : ..... : : Alkyne : C_nH_{2n-2}

Ans. Alkene : $\mathbf{C_nH_{2n}}$: : Alkyne : C_nH_{2n-2}

3) Match the pair.

Column "A"	Column "B"

i. IRS	a. Education
ii. EDUSAT	b. Locating place with precision
	c. Monitoring and Management of natural resources and disaster management

Ans.

i. IRS	Monitoring and Management of natural resources and disaster management
ii. EDUSAT	Education

4) State true or false.

During dispersion red colour deviates the most.

Ans. During dispersion red colour deviates the most. - **False.**
Violet colour deviates the most.

5) Name the following

Loss or gain of energy is observed in this change

Ans. Chemical change

Q.2 A) Give scientific reason. (Any two) **(4)**

1) In DC generator, the flow of current in the circuit is in the same direction.

Ans.
i. In DC generator, one brush in the circuit is always in contact with the arm of the rectangular coil moving up in the magnetic field.
ii. The other brush is in contact with the arm of the rectangular coil moving downwards in the magnetic field.
iii. Therefore, the flow of current in the circuit is in the same direction.

2) During cold nights, sometimes dew is formed.

Ans.
i. The atmosphere always contains some quantity of water vapor.
ii. When the sample of air is cooled sufficiently, or when it touches cold surfaces like grass, the water vapor present in it gets saturated and some water vapor condenses into water droplets.
iii. The temperature at which the air becomes saturated with water vapor is called the dew point.
iv. Hence, during cold nights, sometimes dew is formed.

3) Atomic size goes on decreasing while going from left to right within a period.

Ans.
i. As we go from left to right within a period, the atomic number increase one by one i.e the positive charge on nucleus increase one at a time.
ii. However, the additional electron gets added to the same outer most shell. (no of shells across the period are same)
iii. Due to the increased nuclear change the electrons are pulled towards the nucleus to a greater extent and therefore the size of atom decreases.

(B) Solve the following questions. (Any three) **(6)**

1) Write short note on Ethanol.

Ans.
i. At room temperature colourless ethanol is a liquid and its boiling points is 78^0C.
ii. Generally ethanol is called alcohol or spirit. Ethanol is soluble in water in all proportions.

iii. When aqueous solution of ethanol is tested with litmus paper it is found to be neutral. Consumption of small quantities of dilute ethanol shows its effect as it harms health in a number of ways.

iv. Ethanol being good solvent, it is used in medicines such as tincture iodine (solution of iodine and ethanol), cough mixture and also in many tonics.

2) Distinguish between

Ionic compounds and Covalent compounds.

Ans.

	Ionic Compounds	Covalent Compounds
i.	Ionic compounds are solids.	Covalent compounds are usually liquids or gases. Only some of them are solids.
ii.	Ionic compounds have high melting and boiling points.	Covalent compounds have usually low melting and boiling points.
iii.	Ionic compounds conduct electricity when dissolved in water or melted.	Covalent compounds do not conduct electricity.
iv.	Ionic compounds are usually soluble in water and insoluble in organic solvents (like kerosene, petrol, etc.).	Covalent compounds are usually soluble in organic solvents and insoluble in water (except glucose, sugar, urea, etc).

3) If two lenses with focal lengths 10 cm and 20 cm respectively are kept in contact with each other, the effective power of combination is

Ans.

$$\frac{1}{f}=\frac{1}{f_1}+\frac{1}{f_2}$$

$$\frac{1}{f}=\frac{1}{10cm}+\frac{1}{20cm}$$

$$=\frac{100}{10}+\frac{100}{20}$$

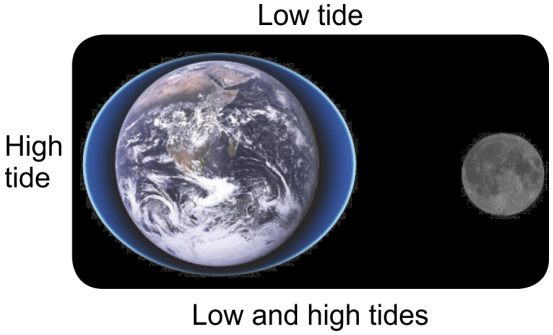
$$= 10 + 5$$

$$= 15$$

$$\frac{1}{f}=15$$

$\therefore$ $P = \frac{1}{f}$ **= 15 D**

4)



Low and high tides

i. What is the reason for high tides and low tides ?

ii. At which two places do the low tides occur ?

Ans. i. The high tides and the low tides occur because of the gravitational force exerted by the moon.

ii. At two places on the earth at 90^o from the place of high tide, the level of water is minimum and low tides occur there.

5)

Name	Molecular formula	Condensed Structural	Number of carbon atoms	Number of - CH_2 units
Ethene	C_2H_4	$CH_2= CH_2$	.....	2
.....	C_3H_6	CH_3-CH=CH_2	3	1
1-Butene	.....	CH_3-CH_2-CH=CH_2	-	-
1-Pentene	C_5H_{10}	.....	-	-

Ans.

Name	Molecular formula	Condensed Structural	Number of carbon atoms	Number of - CH_2 units
Ethene	C_2H_4	$CH_2= CH_2$	**2**	2
Propene	C_3H_6	CH_3-CH=CH_2	3	1
1-Butene	**C_4H_8**	CH_3-CH_2-CH=CH_2	**4**	**2**
1-Pentene	C_5H_{10}	**CH_3-CH_2-CH_2-CH=CH_2**	**5**	**3**

Q.3 Solve the following questions. (Any five) **(15)**

1) Complete the table :

Terms	Units of Measurement
Universal gravitational constant	.....
Weight	.....
.....	Kg
Velocity	.....
Acceleration due to gravity	.....
.....	s

Ans.

Terms	Units of Measurement
Universal gravitational constant	Nm^2/kg^2 or $Nm^2 \cdot kg^{-2}$
Weight	N or kgm/s^2
Mass	Kg
Velocity	m/s
Acceleration due to gravity	m/s^2

Time	s

2) Read the statements given below. Identify and write the concept upon which the given statement is based.

i. A ray of light passes through a point in lens without getting deviated. Name the point.
ii. Neha used a lens to obtain an image and found that the lens showed magnification less than one irrespective of object distance. Name the type of lens Neha was using.
iii. Name the part of human eye that acts as a screen for image formation.
iv. A human eye lens can change its focal length in order to produce clear image. Name this capacity of human eye.
v. Surabhi uses spectacles made of lens with power -0.5 D. Name the defect of vision Surabhi is suffering from.
vi. Name the phenomenon due to which an image remains imprinted on retina for $1/16^{th}$ of second after the object is removed from the front of the eyes.

Ans. i. Optical centre
ii. Concave
iii. Retina
iv. Power of accommodation
v. nearsightedness / myopia
vi. Persistence of vision

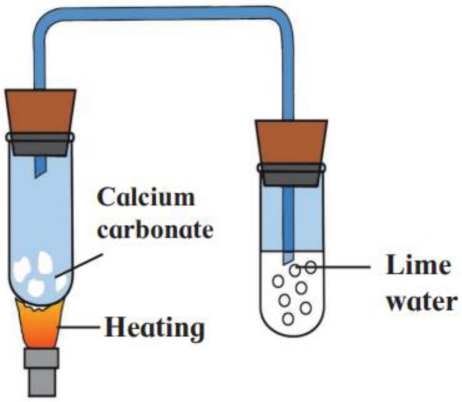
3) How can you relate the formation of water droplets on the outer surface of a bottle taken out of refrigerator with the formation of dew ?

Ans. i. The atmosphere always contains some quantity of water vapor.
ii. The temperature of the air outside the bottle is higher than the temperature of the bottle and so when the air cools, due to decrease in temperature it becomes saturated with water vapor.
iii. As a result, the excess water vapor gets converted into tiny droplets.
iv. Hence, formation of water droplets is seen on the outer surface of the bottle taken out of the refrigerator.
v. This is similar to the dew seen in the early mornings on leaves of plants and window glass of vehicles.

4) A coil of insulated wire is connected to a galvanometer. What would be seen if a bar magnet ?
i. pushed into the coil.
ii. withdrawn from inside the coil.
iii. held stationary inside the coil.

Ans. i. When a bar magnet is pushed into the coil, magnetic field lines linked with the coil changes (increases). It causes the electric current to get induced in it. The needle of galvanometer will move in one direction.
ii. When a bar magnet is withdrawn from inside the coil, the magnetic field lines linked with the coil changes but in decreasing order. The deflection is opposite to that in case of (i).
iii. When bar magnet is held stationary inside the coil, there is no deflection in the galvanometer. This is because there is no change in magnetic field lines linked with the coil. Hence no induced current will flow through the coil.

5) Study the following figure and answer questions.



i. After heating Calcium carbonate, which gas is formed in a test tube?
ii. When we pass this gas through limewater what change, did you observe?
iii. Write down the chemical reaction showing the product formation after heating the Calcium carbonate.

Ans. i. Carbon dioxide
ii. lime water turns milky.
iii. $CaCO_{3(s)} \xrightarrow{\Delta} CaO_{(s)} + CO_2 \uparrow$

6) State the general properties of ionic compounds.

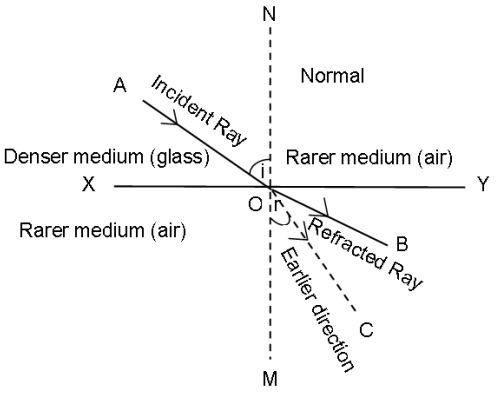
Ans. i. The attractive forces between the positively and negatively charged ions are strong. Therefore, ionic compounds exist in solid state and are hard.
ii. The ionic compounds are brittle and can be broken into pieces by applying pressure.
iii. The intermolecular force of attraction is high in ionic compounds and large energy is required to overcome it. Therefore, the melting and boiling points of ionic compounds are high.
iv. Ionic compounds are soluble in water and insoluble in solvents like kerosene and petrol.
v. The ionic compounds cannot conduct electricity in solid state. However, in the fused /molten state they can conduct electricity, as in this state the ions are mobile. Due to the electrical conductivity in fused and dissolved state the ionic compounds are called electrolytes.

7) **Complete the paragraph:**
(outer space, escape velocity, final velocity, space missions, initial velocity, gravitational force, solar system)
Informations obtained from …… helps us to understand the creation and evolution of our …… for such mission, the space craft must escape the earth's …… to travel in ..... To achieve this, the ..... of the moving object must be greater than ..... of earth.

Ans. Informations obtained from **space missions** helps us to understand the creation and evolution of our **solar system** for such mission, the space craft must escape the earth's **gravitational force** to travel in **outer space**. To achieve this, the **initial velocity** of the moving object must be greater than **escape velocity** of earth.

8) i. Show with the help of diagram when a light ray passes from a denser medium to rarer medium.
ii. Give reason for the same.

Ans. i.



ii. The ray bends away from normal because the speed of light increase in the rarer medium.

Q.4 Solve the following questions. (Any one) **(5)**

1) i. What is the meaning of the term 'humidity'?
ii. Write the formula for percentage relative humidity.
iii. Write the units of heat in CGS and MKS system.
iv. What are the units of specific heat capacity ?
v. How does heat get transferred ?

Ans. i. The dampness or moisture in the air due to the presence of water vapor in it is called humidity.

ii. % Relative humidity = $\frac{\text{actual mass of water vapor content in the air in a given volume}}{\text{mass of vapor needed to make the air saturated in that volume}} \times 100$

iii. In CGS system, heat is measured in calories and in MKS system, it is joule(J).

iv. The units of specific heat capacity in CGS is cal/g^0C and in MKS or SI it is J/kg^0C.

v. Heat always gets transferred from hot body to the cold body till the temperature of both the bodies becomes equal.

2) Classify the following reactions as combination,decomposition, displacement and double displacement reaction.

i. $H_2+Cl_2 \rightarrow 2HCl$

ii. $2HgO \xrightarrow{\Delta} 2Hg+O_2\uparrow$

iii. $2KI+Cl_2 \rightarrow 2KCl+I_2$

iv. $BaCl_2+H_2SO_4 \rightarrow BaSO_4+2HCl$

v. $Zn+2HCl \rightarrow ZnCl_2+H_2\uparrow$

Ans. i. Is combination reaction
ii. Is decomposition reaction
iii. Is displacement reaction
iv. Is double displacement
v. Displacement