

Q.P. SET CODE
B

MT - X

Seat No.

2013 __ __ 1100 - **MT - X** - SCIENCE & TECHNOLOGY (72) - SET - B (E)

Time : 3 Hours

(Pages 5)

Max. Marks : 80

Note :

- (i) All questions are compulsory.
- (ii) All questions carry equal marks.
- (iii) Draw neat and labelled diagrams wherever necessary.

SECTION - A

Q.1. (A) Answer the following sub-questions : 5

(1) Find the odd man out :

Twinkling of stars, Advanced sunrise, Delayed sunset, Blue sky.

(2) Fill in the blank :

Metals have a tendency to electrons.

(3) State whether the following statements are true or false.

- (i) Pollens, bacteria, fungal spores are also pollutants.
- (ii) When the pH value is between 0 to 7, the solution is acidic.
- (iii) The unit of potential difference is ampere.

Q.1. (B) Rewrite the following statements by selecting the correct options : 5

(1) The refractive index depends upon the of propagation of light in different media.

- (a) relative speed
- (b) density of medium
- (c) amplitude
- (d) frequency

- (2) At the time of short circuit, the current in the circuit
- (a) increases (b) decreases
(c) remains (d) increases in steps
- (3) The power of spectacle for myopic eye is
- (a) positive (b) negative
(c) zero (d) positive and negative
- (4) Eka-boron was subsequently named as
- (a) gallium (b) germanium
(c) scandium (d) molybdenum
- (5) When is passed through fresh lime water, it turns milky.
- (a) H₂ (b) CO
(c) CO₂ (d) SO₂

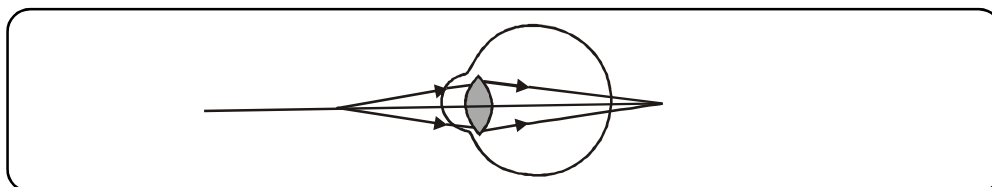
Q.2. Attempt any FIVE of the following :**10**

- (1) State the function of iris and ciliary muscles.
- (2) Distinguish between : Electric motor and generator.
- (3) State the Right hand thumb rule.
- (4) What is the refractive index of the second medium w.r.t. the first medium if light moves through the first medium with a velocity 2×10^8 m/s, which changes to 1.25×10^8 m/s in second medium ?
- (5) Distinguish between : Physical change and Chemical change.
- (6) Explain the following chemical reaction with the help of balanced equation : Copper oxide reacts with dilute hydrochloric acid.

Q.3. Attempt any FIVE of the subquestions :

15

- (1) What major harm is done to the human beings by air pollution?
- (2) Write a note on dispersion of light.
- (3) Given below is a diagram showing a defect of human eye.



Study it and answer the following questions :

- (a) Name the defect shown in figure.
- (b) Give two possible reasons for this defect of eye in human being.
- (c) Name the type of lens used to correct the eye defect.
- (4) Find the expression for resistivity of a material.
- (5) State the neutralization reaction with an example.
- (6) What do you understand by the term redox reaction? Explain with one example.

Q.4. Attempt any ONE of the following :

5

- (1) Find the expression for the resistance connected in parallel.
- (2) Write a short note on indicators with proper example.

SECTION - B

Q.5. (A) Answer the following sub-questions :

5

(1) Find the odd man out :

Steel, Iron, Copper, Tungsten.

(2) Define : Roasting.

(3) Fill in the blank :

The male reproductive part of a flower is

- (4) **State whether the following statement is true or false. If false write the corrected statement :**

Fossil fuels are renewable.

- (5) **Complete the co-relation :**

Fossil fuel : Petrol :: Animal dung :

- Q.5. (B) Rewrite the following statements by selecting the correct options : 5**

- (1) is liberated when acetic acid reacts with sodium metal.

(a) H_2 (b) O_2
(c) CO_2 (d) NH_3

- (2) According to reactivity of metals

(a) $Zn < Al < Fe < Cu$ (b) $Zn > Al > Fe > Cu$
(c) $Cu < Fe < Zn < Al$ (d) $Cu < Fe < Al < Zn$

- (3) Acetic acid

(a) turns red litmus blue (b) has pungent odour
(c) is red in colour (d) is odourless

- (4) To observe stomata in a dicot leaf, we must prepare a slide by taking

(a) the crushed leaf
(b) the upper epidermis of the leaf
(c) the lower epidermis of the leaf
(d) the central part of the leaf

- (5) reproduces by budding.

(a) Virus (b) Bacteria
(c) Yeast (d) Amoeba

Q.6. Attempt any FIVE of the following : **10**

- (1) Distinguish between : Metals and Non-metals. (Based on physical properties)
- (2) Draw structure along with molecular formula of cyclohexane.
- (3) Write short notes on reflex action.
- (4) What are analogous organs ? Give examples.
- (5) Insulin plays an important role in controlling the sugar level of blood. Why?
- (6) What are fossils ? How are they formed ?

Q.7. Attempt any FIVE of the following : **15**

- (1) Metal A has electronic configuration of (2, 8, 1) and metal B has (2, 8, 8, 2) which is more reactive. Identify these metals and give their reactions with dil. HCl.
- (2) What are hydrocarbons ? Give the classification of hydrocarbons.
- (3) Name the pairs of visible contrasting characters in garden peas (*Pisum sativum*).
- (4) What is the three 'R' mantra? Write its significance.
- (5) Describe the Central Nervous System in human beings.
- (6) How do plants get rid of their excretory products ?

Q.8. Attempt any ONE of the following : **5**

- (1) Describe the process of cellular or internal respiration.
- (2) Describe the human male reproductive system.

Best Of Luck 🍀

A.P. SET CODE
B

MT - X

2013 __ __ 1100 - MT - X - SCIENCE & TECHNOLOGY (72) - SET - B (E)

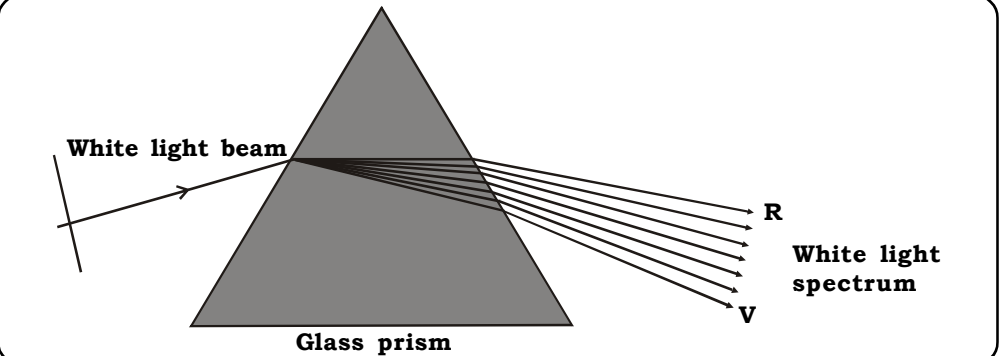
Time : 3 Hours

Preliminary Model Answer Paper

Max. Marks : 80

SECTION - A		
Q.1.	(A) Answer the following sub-questions :	
(1)	Blue sky. This is because of scattering of light, while the others are due to atmospheric refraction.	1
(2)	Metals have a tendency to donate electrons.	1
(3)	(i) True.	1
	(ii) True.	1
	(iii) False. The unit of potential difference is volt.	1
Q.1.	(B) Rewrite the following statements by selecting the correct options :	
(1)	The refractive index depends upon the relative speed of propagation of light in different media.	1
(2)	At the time of short circuit, the current in the circuit increases.	1
(3)	The power of spectacle for myopic eye is negative.	1
(4)	Eka-boron was subsequently named as scandium.	1
(5)	When CO₂ is passed through fresh lime water, it turns milky.	1
Q.2.	Attempt any FIVE of the following :	
(1)	1. Iris in human eye controls and regulates the amount of light entering the eye by contracting and dialating the pupil. 2. Ciliary muscles adjusts the focal length of eye lens by contracting and relaxing.	2

(2)	Electric motor	Electric generator	2
	1. A device which converts electrical energy into mechanical energy is called an electric motor. 2. Electric motor is based on a principle, when current carrying conductor is placed in a magnetic field a force acts on it. 3. It uses electricity.	1. An electric device which converts mechanical energy into electrical energy is called an electric generator. 2. It works on the principle of electromagnetic induction. 3. It generates electricity.	
(3)	Imagine that you are holding a current carrying straight conductor in your right hand such that the thumb points towards the direction of current, then the curled fingers around the conductor will give the direction of the magnetic field.		2
(4)	<p>Given : Velocity in first medium (V_1) = 2×10^8 m/s Velocity in second medium (V_2) = 1.25×10^8 m/s</p> <p>To find : Refractive index of second medium w.r.t. the first medium (${}_1\eta_2$)</p> <p>Formula : ${}_1\eta_2 = \frac{V_1}{V_2}$</p> <p>Solution : ${}_1\eta_2 = \frac{V_1}{V_2}$</p> <p>$\therefore {}_1\eta_2 = \frac{2 \times 10^8}{1.25 \times 10^8}$</p> <p>$\therefore {}_1\eta_2 = 1.6$</p> <p>The refractive index of the second medium w.r.t. the first medium is 1.6.</p>		2
(5)	Physical change	Chemical change	2
	1. In this change, the composition of substance does not change and no new substance is formed. 2. There is a change only in physical properties. 3. This change is temporary. 4. The original substance can be recovered by simple means. 5. Eg.: Steam is condensed.	1. In this change, the composition of substance changes and a new substance is formed. 2. There is a change in both physical and chemical properties. 3. This change is permanent. 4. The original substance cannot be recovered by simple means. 5. Eg.: Ripening of fruit, milk is converted to curd.	

(6)	<p>When copper oxide reacts with dilute hydrochloric acid it gives a blue solution of copper chloride.</p> $\text{CuO}_{(s)} + 2\text{HCl}_{(aq)} \rightarrow \text{CuCl}_{2(aq)} + \text{H}_2\text{O}_{(l)}$ <p>Copper oxide Hydrochloric acid Copper chloride Water</p>	2
Q.3.	Attempt any FIVE of the subquestions :	
(1)	<p>Air pollution can affect the health of human beings in many ways with both short term and long term effects:</p> <p>Short term effects include:</p> <ul style="list-style-type: none"> (i) Irritation of eyes, nose, mouth and throat. (ii) Respiratory infections such as bronchitis, pneumonia. (iii) Headaches, nausea and allergy. (iv) Asthma attacks. (v) Reduced lung functioning. <p>Long term effects include:</p> <ul style="list-style-type: none"> (i) Chronic pulmonary disease. (ii) Cardio vascular disease. (iii) Lung cancer. (iv) Premature death. 	3
(2)	<div style="border: 1px solid black; padding: 10px; text-align: center;">  </div> <ol style="list-style-type: none"> 1. The phenomenon of splitting of light into its component colours is dispersion. 2. Sir Issac Newton was the first to use a glass prism to obtain the spectrum of sunlight. 3. A prism is a transparent medium bounded by two plane surfaces inclined at an angle. 4. When white light is dispersed into seven colours by a prism, different colours of light bend through different angles with respect to incident ray. 5. Out of these seven colours, red light bends the least while violet light bends the most, as each colour bends in different angle all colours become separate and we get a spectrum of seven different colours. 	3

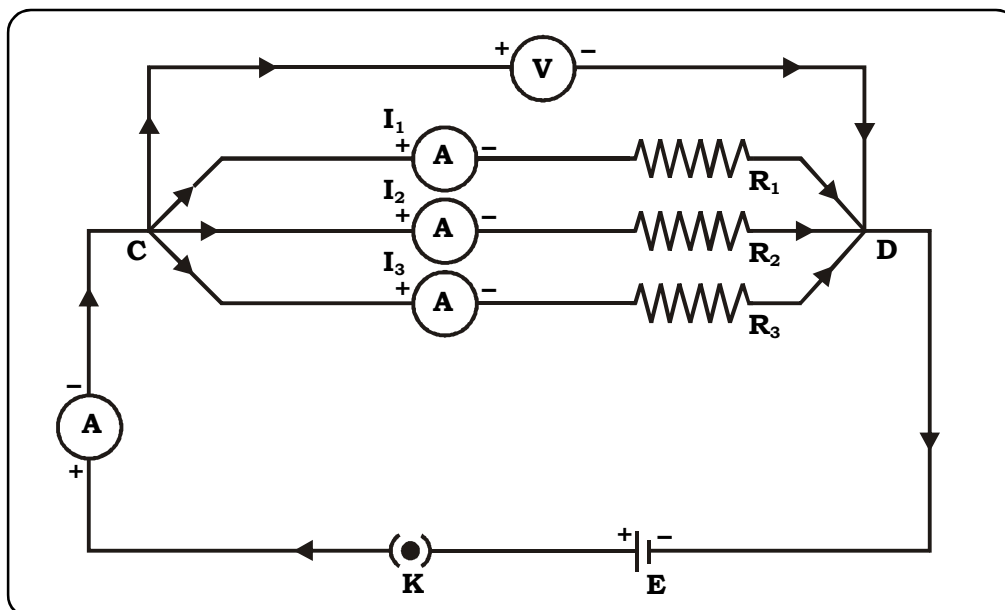
(3)	<p>(a) The eye defect is hypermetropia</p> <p>(b) Two possible reasons of hypermetropia are :</p> <p>(i) Weak action of ciliary muscles causes low converging power of eye lens.</p> <p>(ii) The distance between eye lens and retina decreases on account of either shortening of eyeball or flattening of lens. In this case focal length of the eye lens is too long.</p> <p>(c) Convex lens of suitable focal length.</p>	3
(4)	<p>1. Resistance of a conductor depends on the length 'ℓ' and area of cross section 'A' of the conductor</p> $R \propto \ell$ <p>and $R \propto \frac{1}{A}$</p> $\therefore R \propto \frac{\ell}{A}$ $\therefore R = \rho \frac{\ell}{A}$ <p>2. Where ρ is called resistivity of the conductor. It is also called as specific resistance. If we put $\ell = 1\text{m}$ and $A = 1\text{m}^2$ then</p> $\therefore R = \rho$ <p>3. Thus resistivity of a conductor is defined as the resistance of a conductor of unit length and unit area of cross - section.</p> <p>4. The S.I. unit of resistivity is ohm - metre ($\Omega\text{-m}$).</p>	3
(5)	<p>1. The reaction between acid and base to form salt and water is called as neutralization reaction.</p> $\text{Acid} + \text{Base} \rightarrow \text{Salt} + \text{Water}$ <p>2. When an acid is treated with base, the base neutralizes the acid and destroys its acidity. Since an acid and base neutralize each other's effect, it is called as neutralization reaction.</p> <p>3. Eg.: When hydrochloric acid reacts with sodium hydroxide, then a neutralization reaction takes place to give salt and water.</p> $\text{NaOH}_{(\text{aq})} + \text{HCl}_{(\text{aq})} \rightarrow \text{NaCl}_{(\text{aq})} + \text{H}_2\text{O}_{(\text{l})}$	3
(6)	<p>1. When oxidation and reduction takes place simultaneously in a chemical reaction, it is termed as redox reaction.</p> <p>2. Eg.: When sulphur dioxide reacts with hydrogen sulphide, it forms water and sulphur.</p> $\text{SO}_2 + 2\text{H}_2\text{S} \rightarrow 2\text{H}_2\text{O} + 3\text{S} \downarrow$	3

In this reaction, SO_2 is changing to S. This is removal of oxygen which is called as reduction. So, SO_2 is reduced to S. H_2S is changing to H_2O . This is addition of oxygen which is called as oxidation. So, H_2S is oxidized to H_2O .

Q.4. Attempt any ONE of the following :

(1)

5



- Let R_1 , R_2 and R_3 be the three resistances connected in parallel combination between points C and D and let R_p be their effective resistance.
- Let I_1 , I_2 and I_3 be the currents flowing through resistances R_1 , R_2 and R_3 respectively.
Let I be the current flowing through the circuit and V be the potential difference of the cell.

- For parallel combination of resistances,

$$I = I_1 + I_2 + I_3 \quad \dots\dots (i)$$

According to Ohm's law,

$$I = \frac{V}{R_p}$$

Therefore,

$$I_1 = \frac{V}{R_1}, \quad I_2 = \frac{V}{R_2}, \quad I_3 = \frac{V}{R_3}.$$

- Substituting the values of I , I_1 , I_2 and I_3 in equation (i) we get

$$\frac{V}{R_p} = \frac{V}{R_1} + \frac{V}{R_2} + \frac{V}{R_3}$$

$$V\left(\frac{1}{R_p}\right) = V\left(\frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}\right)$$

$$\therefore \frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

For 'n' number of resistances $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \dots + \frac{1}{R_n}$

- (2) 1. An indicator is a dye that changes colour when it is put into acid or a base. An indicator gives different colours in acid and base. Thus an indicator tells us if the given substance is an acid or base by changing its colour. The three common indicators are : Litmus, methyl orange, phenolphthalein.

Natural indicators : The most common indicators used for testing acids and bases in the laboratory is litmus that is a natural indicator. Litmus paper is obtained from a plant called as lichens (division thallophyta). Other examples are beetroot, turmeric, rose petals etc.

Synthetic indicator : The indicator that is artificially prepared is called as synthetic indicator. Eg: Phenolphthalein, eosin, methyl orange are synthetic indicators.

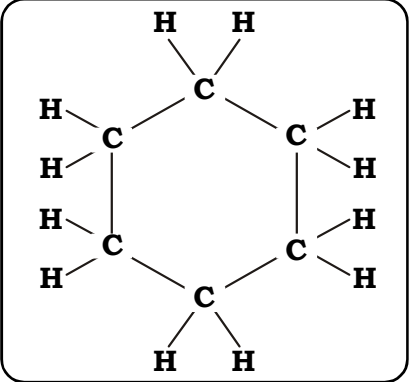
Universal indicator :

1. It is a mixture of many different indicators (or dyes) which give different colours at different pH values. Just like litmus, universal indicator can be used in the form of solution or in the form of pH paper.
2. When an acid or base solution is added to the universal indicator, the indicator produces a new colour. The colour produced by universal indicator is used to find the pH value of acid or base by matching the colour with colours on pH colour chart which determines the strength of acid and bases.

Olfactory indicator : The term olfactory means relating to sense of smell. Those substances whose smell changes in acidic or basic solution are called as olfactory indicators. It works on the principle that when an acid or base is added to it, its characteristic smell cannot be detected. Onion and vanilla extract are olfactory indicators.

Eg. : Onion has a characteristic smell. When a basic solution like sodium hydroxide solution is added to a cloth strip treated with onions, then the onion smell cannot be detected. An acidic solution like hydrochloric acid, does not destroy the smell of onions. This is used as a test for acids and bases.

SECTION - B		
Q.5. (A) Answer the following sub-questions :		
(1) Steel as it is an alloy, rest are elements.		1
(2) The process of converting sulphide ore into oxide by heating strongly in presence of excess air is called roasting.		1
(3) The male reproductive part of a flower is stamen .		1
(4) False . Fossil fuels are non renewable.		1
(5) Biogas .		1
Q.5. (B) Rewrite the following statements by selecting the correct options :		
(1) H₂ is liberated when acetic acid reacts with sodium metal.		1
(2) According to reactivity of metals Cu < Fe < Zn < Al .		1
(3) Acetic acid has pungent odour .		1
(4) To observe stomata in a dicot leaf, we must prepare a slide by taking the lower epidermis of the leaf .		1
(5) Yeast reproduces by budding.		1
Q.6. Attempt any FIVE of the following :		
(1)	Metals	Non-metals
	<p>1. State : Metals are generally solids at room temperature. Exception: Mercury and gallium are liquid at room temperature.</p> <p>2. Hardness : Metals are generally hard. Exceptions : Sodium and Potassium can be cut with a knife.</p> <p>3. Lustre : Metals in their pure state have a brilliant shine called as metallic lustre.</p> <p>4. Density : Metals generally have high density. Exceptions : Sodium and Potassium have density less than water.</p>	<p>1. State : Non-metals are generally solids or gases. Exception: Bromine is the only non-metal in liquid state.</p> <p>2. Hardness : Non-metals are generally soft. Exceptions : Carbon in the form of diamond is the hardest naturally occurring substance.</p> <p>3. Lustre : Non-metals generally do not have lustre. Exceptions : Iodine crystals and diamond have lustre.</p> <p>4. Density : Non-metals generally have low density. Exceptions : Diamond is as heavy as aluminium.</p>
		2

	<p>5. Malleability : Metals are generally malleable (can be beaten into sheets).</p> <p>6. Ductility : Metals are ductile (Drawn or stretched into thin wires). Gold is the most ductile metal.</p> <p>7. Metals are good conductors of heat and electricity. Silver & Copper are the best conductor of electricity.</p> <p>8. Metals are strong and tough, they have high tensile strength.</p> <p>9. Metals are sonorous, they produce a ringing sound when struck.</p> <p>10. Metals usually have high melting point and boiling point. Exception: sodium and potassium have low melting point (98°C and 64°C).</p>	<p>5. Malleability : Non-metals are non-malleable, if they are hammered they form powdery mass. So, they are brittle in nature.</p> <p>6. Ductility : Non-metals are non-ductile.</p> <p>7. Non-metals are in general bad conductors of electricity. Exceptions : Graphite is a good conductor of electricity.</p> <p>8. Non-metals are not strong, they have low tensile strength.</p> <p>9. Non - metals are not sonorous.</p> <p>10. Non- metals have usually low melting piont or boiling point. Exception: Diamond has a high melting point (more than 3500°C).</p>	
(2)	<p>Molecular formula : C_6H_{12}</p> <p>Structural formula :</p>		2
(3)	<p>1. Any sudden change in response to some happening in the environment, is called as reflex action.</p> <p>2. We react to such a situation without thinking about it or without feeling in control of our reactions.</p> <p>3. Example : When we touch a vessel containing very hot tea,</p>		2

	<p>immediately the hand is withdrawn.</p> <p>4. In this case, the nerves that detect pain are connected to the nerves that bring about the action of the muscle, hence the action is completed quickly.</p> <p>5. Nerves from all over the body meeting in a bundle in such a connection is called as the spinal cord.</p> <p>6. Hence reflex arcs are formed in the spinal cord, although the messages reach the brain.</p>	
(4)	<p>Organs which are fundamentally unlike but similar in function are termed as analogous organs. Eg. :</p> <ol style="list-style-type: none"> 1. Tail fin of lobster and flukes of whale. 2. Wings of fly and wings of a bird. 3. Eyes of arthropods and vertebrates. 	2
(5)	<ol style="list-style-type: none"> 1. Insulin is a hormone which controls the sugar level of blood. 2. It is very important that insulin should be secreted according to the amount of sugar in the blood. 3. The required quantity of insulin released and the time of released are regulated by feedback mechanisms. 4. When the sugar level of blood rises, it is detected by the cells of the pancreas which respond to the situation by producing more insulin so that the sugar level comes back to normal. 5. On the other hand, as the sugar level of the blood falls, the secretion of insulin is reduced. 6. Therefore, insulin plays an important role in controlling the sugar level of blood. 	2
(6)	<ol style="list-style-type: none"> 1. Fossils are formed by the burial of dead plants and animals. 2. When plants or animals die, their bodies get decomposed. 3. Over time, the skeleton is gradually buried deeper by the overlying sediments. 4. Slowly, the weight of the sediments, compresses the dead bodies and water is squeezed out of them. 5. This compressed mass then turns into fossils. 	2
Q.7.	Attempt any FIVE of the following :	
(1)	<p>The elements are sodium and calcium respectively. In the reactivity series, since sodium is placed before calcium, sodium is more reactive than calcium. When sodium reacts with dilute hydrochloric acid to give sodium chloride and hydrogen gas is liberated.</p> $2\text{Na}_{(s)} + 2\text{HCl}_{(aq)} \rightarrow 2\text{NaCl}_{(aq)} + \text{H}_2\uparrow$ <p>Sodium Hydrochloric acid Sodium chloride Hydrogen</p> <p>When calcium reacts with dilute hydrochloric acid to give calcium</p>	3

	<p>chloride and hydrogen gas is liberated.</p> $\text{Ca}_{(s)} + 2\text{HCl}_{(aq)} \rightarrow \text{CaCl}_{2(aq)} + \text{H}_2\uparrow$ <p>Calcium Hydrochloric acid Calcium chloride Hydrogen</p> <p>(2) Hydrocarbons are the compounds containing carbon and hydrogen elements only. Hydrocarbons are classified as follows :</p> <p>Hydrocarbons : Compounds containing carbon and hydrogen only.</p> <pre> graph TD A[Hydrocarbons] --> B[Open chain hydrocarbons (Aliphatic)] A --> C[Closed-chain] B --> D[Saturated hydrocarbons] B --> E[Unsaturated hydrocarbons] D --> F[Alkanes] E --> G[Alkenes] E --> H[Alkynes] </pre> <p>Open chain hydrocarbons (Aliphatic)</p> <p>Saturated hydrocarbons Definition : Hydrocarbons in which carbon atoms are linked to each other only by single bonds are known as saturated hydrocarbons.</p> <p>Unsaturated hydrocarbons Definition : Hydrocarbons in which carbon atom are linked to each other by double or triple bonds are known as unsaturated hydrocarbons.</p> <p>Alkanes (C_nH_{2n+2}) Compounds containing C - C single bonds Eg. CH₄ Methane C₂H₆ Ethane C₃H₈ Propane C₄H₁₀ Butane</p> <p>Alkenes (C_nH_{2n}) Compounds containing C = C double bonds Eg. C₂H₄ Ethene or Ethylene C₃H₆ Propene C₄H₈ Butene</p> <p>Alkynes (C_nH_{2n-2}) Compounds containing C ≡ C triple bonds Eg. C₂H₂ Ethyne or Acetylene C₃H₄ Propyne C₄H₆ Butyne</p>	3
	<p>(3) The pairs of visible contrasting characters in garden peas (<i>Pisum sativum</i>) are :</p> <ol style="list-style-type: none"> 1. Tall/short plants 2. Red/white flowers 3. Round/wrinkled seeds 4. Axial/terminal position of flowers 5. Green/yellow coloured pods 6. Grey/white colour of the seed coat 7. Full/constricted shaped pods. 	3
	<p>(4) (i) Reduce, reuse and recycle is the three 'R mantra'. This is an effective way to eliminate waste and conserve resources.</p> <p>(iii) Reduce means using fewer resources in the first place.</p>	3

	<p>(iv) Reuse means instead of throwing things away, try to find ways to use them again.</p> <p>(v) Recycle means the items are put through a process that makes it possible to create new products out of the materials from the old ones.</p> <p>(vi) Reducing, reusing and recycling cut the amount of energy used to produce new items and amount of pollution generated as a result. It also conserves valuable natural resources that would otherwise be used to produce new items from raw materials.</p> <p>(5) 1. The central Nervous system is a delicate structure composed of the brain and spinal cord.</p> <p>2. The brain is protected by a bony structure called cranium or skull and the spinal cord is protected by the vertebral column or the back bone.</p> <p>3. In between the soft CNS and the bone are present protective membranes called the meninges.</p> <p>4. There are cavities present on the different parts of brain known as ventricles, while the long cavity of the spinal cord is called central canal.</p> <p>5. The ventricles, central canal and the space between the meninges are filled with cerebrospinal fluid (CSF).</p> <p>6. The CSF keeps the CNS well nourished and also protects it from absorbing mechanical shocks.</p> <p>7. The brain is a complex organ divided into three regions : the forebrain, midbrain and hindbrain.</p> <p>8. The forebrain or cerebrum is the main thinking part of the brain. It has regions which receive the sensory impulses from various receptors. The areas for smell, hearing, vision etc. are separate.</p> <p>9. Even there are different areas where the sensory information is received and interpreted and put together with the information received from other receptors as well as the information that is already stored in the brain. Such centres are known as association centres.</p> <p>10. Involuntary activities like blood flow, breathing, sneezing etc. are controlled by Medulla oblongata, a component of the hind brain.</p> <p>11. Another component of the hind brain is cerebellum. It is responsible for co-ordinating the voluntary movements and also maintaining the balance of our body. Eg. riding a bicycle, picking up an object from the floor, running along a straight line etc.</p> <p>12. Spinal cord is an important part of the CNS which extends through the vertebral column. It controls the reflex actions.</p> <p>13. Each side of our brain controls the opposite side of the body. Usually the left side of the brain controls speaking, writing and logical thought. The right side of the brain controls artistic abilities.</p>	3
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(6)	<ol style="list-style-type: none"> Plants do not have definite excretory system or organ for removal of wastes. Gaseous excretory materials are eliminated by diffusion. Many plant waste products are stored in the vacuoles of the leaves, flowers, fruits and even in the bark that falls off. Other waste products are stored as resins and gums in old xylem. Plants also excrete some waste substances in the soil around them. In some plants, waste is in the form of calcium oxalate crystals called as raphides. These are needle shaped and therefore hurt and cause itching. Some plant wastes are very useful to human beings. Eg. rubber latex, gum, resins and essential oils like eucalyptus or sandalwood oil. 	3
Q.8.	Attempt any ONE of the following :	
(1)	<ol style="list-style-type: none"> Cellular respiration is a biochemical process in which the simple nutrients like glucose are oxidized within the cells to release energy. This process takes place in the mitochondria of the cells and involves a series of biochemical reactions. The process of cellular respiration varies greatly in different organisms yet the first step is common in all. The six carbon molecule glucose ($C_6H_{12}O_6$) is broken down in the cytoplasm into a three carbon molecule called pyruvate. This process is anaerobic and is called glycolysis. 	5
<div style="text-align: center;"> <p>In absence of oxygen (fermentation) Eg. in yeast</p> <p>Ethanol + carbon dioxide + energy (2-Carbon compound) (2ATP)</p> <p>In lack of oxygen Eg. in human muscle cells</p> <p>Lactic acid + energy (2ATP) (3-Carbon compound)</p> <p>In presence of oxygen Eg. in mitochondria</p> <p>Carbon dioxide + water + energy (1-Carbon compound) (38ATP)</p> <p>(Break down of glucose by various pathways)</p> </div>		
4.	<p>The energy released during cellular respiration is used to synthesize ATP which is used to fuel all other activities in the cell.</p> <p>The energy released during aerobic respiration is more than the energy released during anaerobic respiration.</p>	
(2)	<p>The human male reproductive system consists of :</p> <ol style="list-style-type: none"> Testis : Produces sperms (male germ cells). As formation of sperms require temperature lower than the normal body temperature, testes are located outside the abdominal cavity in the scrotum. Testes 	5

secrete the hormone testosterone which brings about changes in boys during puberty.

2. **Epididymis** : Immature sperms travel to the epididymis for development and storage.
3. **Vas deferens** : It is a passage through which the sperm travels towards the urethra.
4. **Seminal vesicle and prostate glands** : They produce the ejaculatory fluid which helps the sperm in transport and provides nutrition.
5. **Penis** : It is the portion of the reproductive system that delivers the sperms to the site of fertilization.
6. **Sperms** : A sperm cell is composed of a head which carries the genetic information, a middle part which carries mitochondria for energy production and a tail which is like a flagellum to help in movement towards the female germ cells.

