

CLASS X (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-10

Time : 3 Hours

Maximum Marks : 80

General Instructions :

- (i) The question paper comprises of three sections-A, B and C. Attempt all the sections.
- (ii) All questions are compulsory.
- (iii) Internal choice is given in each sections.
- (iv) All questions in Section A are one-mark questions comprising MCQ, VSA type and assertion-reason type questions. They are to be answered in one word or in one sentence.
- (v) All questions in Section B are three-mark, short-answer type questions. These are to be answered in about 50-60 words each.
- (vi) All questions in Section C are five-mark, long-answer type questions. These are to be answered in about 80-90 words each.
- (vii) This question paper consists of a total of 30 questions.

Section A

1. Name the plant hormones responsible for elongation of cells. [1]
Ans : Auxin.

2. What are the two factors on which the lateral displacement of an emergent ray from a glass slab depends ? [1]
Ans :

- i. Angle of incidence
- ii. Thickness of glass slab

3. Answer question numbers 3.1-3.4 on the basis of your understanding of the following paragraph and the related studied concepts.

Operating on the same principle as wind turbines, the power in sea turbines comes from tidal currents, which turn blades similar to ships' propellers, but, unlike wind, the tides are predictable and the power input is constant. The technology raises the prospect of many countries becoming self-sufficient in renewable becoming self-sufficient in renewable energy and drastically reducing its carbon dioxide emissions. If tide, wind and wave power are all developed, Britain would be able to close gas, coal and nuclear power plants and export renewable power to other parts of Europe. Unlike wind power, which Britain originally developed and then abandoned for 20 years allowing the Dutch to make it a major industry, undersea turbines could become a big export earner to island nations such as Japan and New Zealand.

- 3.1 On what principle do the sea turbines operate? [1]
3.2 What is the advantage of sea turbines over wind turbines? [1]
3.3 If tide, wind and wave power are used by Britain which other energy sources are likely to be closed by it? [1]
3.4 For which countries sea turbines can become a good source of energy? [1]

Ans :

- 3.1 Wind turbines.

3.2 Unlike the wind the tides are predictable hence, power input is constant.

3.3 Gas, coal and nuclear plants.

3.4 Japan and New Zealand.

4. Question numbers 4.1-4.4 are based on the two tables given below. Study this table and answer the questions that follow :

More than a million Americans die of cardiac diseases each year. One of the major causes is high cholesterol levels in the blood. The National Cholesterol Education Program suggests that total blood cholesterol level should be :

Blood Cholesterol Level Chart			
	Desirable	Borderline (high)	High Risk
Total Cholesterol	< 200	200-240	> 240
Triglycerides	< 150	150-500	> 500
Low Density Cholesterol	< 130	130-160	> 160
High Density Cholesterol	> 50	50-35	< 35

Given below are blood report of two persons

	Total Cholesterol	Triglycerides		
Patient A	356	180		
Patient B	180	100		

- 4.1 Which of the organ can be affected in a patient A? Can you infer the same risk factor for patient B? [1]

Ans : Heart. No

- 4.2 What information is left out for the blank columns? [1]

Ans : Low Density Cholesterol, High Density Cholesterol

- 4.3 A person with high risk category have to be suggested a suitable diet ? Which of the following are correct guidelines for the patient [1]

- (a) High sugar and starch
- (b) Low salt and fats
- (c) High proteins
- (d) Low sugar and proteins

Ans : (b) Low salt and fats

4.4 Apart from following a prescribed diet, some other changes should be brought in the lifestyle to avoid aggravation of symptoms in a patient who is already suffering from high blood cholesterol-

- A. Yoga and exercise
- B. Quitting smoking and alcohol
- C. Walking and doing small chores on your own
- D. Enjoying loud music

Which of the following is the correct option [1]

- (a) A, C
- (b) B, C, D
- (c) A, B, C
- (d) A, D

Ans : (c) A, B, C

5. The blue colour of aqueous copper sulphate solution can be changed to pale green by immersing which of the following metal rod in it ? [1]

- (a) Iron
- (b) Zinc
- (c) Aluminium
- (d) Silver

Ans : (a) Iron

or

When zinc rod is placed in copper sulphate solution, the blue colour of the solution starts fading. From this observation a student concluded that the fading of colour is due to : [1]

- (a) oxidation of zinc
- (b) reduction of copper ions
- (c) reduction of sulphate ions
- (d) oxidation of sulphate ions

Ans : (b) reduction of copper ions

6. Saurabh has to perform the experiment of finding the focal length of a concave mirror by using a distant object. Which of the following 'set ups' will he choose apart from the mirror and screen provided ? [1]

- (a) A mirror holder, and a scale
- (b) A mirror holder, a screen holder and a scale
- (c) A screen holder and a scale
- (d) A mirror holder and a screen holder

Ans : (b) A mirror holder, a screen holder and a scale

7. A teacher asks Rani to obtain a sharp image of distant object on the screen by choosing appropriate devices out of the following : [1]

- i. concave mirror
- ii. convex lens
- iii. concave lens

She can successfully obtain image by using :

- (a) a concave mirror only
- (b) a convex lens only
- (c) both either by concave mirror or by convex lens
- (d) convex lens only

Ans : (c) both either by concave mirror or by convex lens

8. Two prepared slides showing stages of reproduction in (i) Amoeba and (ii) yeast were observed by four students P, Q, R and S. The observations as reported by the four students are as follows : [1]

P : Cytokinesis was seen in the yeast cell.

Q : In Amoeba, elongated nucleus was dividing to form two daughter nuclei.

R : A chain of buds was seen due to reproduction in Amoeba.

S : Single cells of Amoeba and yeast were undergoing binary fission and budding respectively.

The correct observations are :

- (a) P, Q and S
- (b) P and R only
- (c) R only
- (d) Q and S only

Ans : (d) Q and S only

or

The structure of seed which is also known as plumule is : [1]

- (a) embryonic shoot
- (b) embryonic root
- (c) both of these
- (d) none of these

Ans : (a) embryonic shoot

9. A student on adding (i) Na metal (ii) Na_2CO_3 and (iii) NaHCO_3 solution in acetic acid in test tubes A, B, C would observe that the gas evolved in the three test tubes respectively are : [1]

- (a) $\text{H}_2, \text{CO}_2, \text{CO}_2$
- (b) $\text{CO}_2, \text{H}_2, \text{CO}_2$
- (c) $\text{CO}_2, \text{CO}_2, \text{H}_2$
- (d) $\text{CO}_2, \text{CO}, \text{H}_2$

Ans : (a) $\text{H}_2, \text{CO}_2, \text{CO}_2$

10. A cylindrical conductor of length l and uniform area of cross-section A has resistance R . Another conductor of length $2l$ and resistance R of the same material has area of cross section [1]

- (a) $A/2$
- (b) $3A/2$
- (c) $2A$
- (d) $3A$

Ans : (c) $2A$

11. The stomatal apparatus comprises : [1]

- (a) guard cells
- (b) stomata and guard cells
- (c) stomata, guard cells and accessory cells
- (d) guard cells and chloroplast

Ans : (b) stomata and guard cells

12. Which of the following set of elements is written in order of their increasing metallic character? [1]

- (a) Be Mg Ca
- (b) Na Li K
- (c) Mg Al Si
- (d) C O N

Ans : (a) Be Mg Ca

or

In Mendeleev's Periodic Table, gaps were left for the elements to be discovered later. Which of the following elements found a piece in the periodic table later?

- (a) Germanium
- (b) Chlorine
- (c) Oxygen
- (d) Silicon

Ans : (a) Germanium

(Q.no 13 to 14) In each of the following questions, a statement of Assertion is given by the corresponding statement of Reason. Of the statements, mark the correct answer as.

- (a) If assertion is true and reason is correct explanation of assertion.
 (b) If assertion is true but reason is false.
 (c) If assertion is false but reason is true.
 (d) If both are false.

13. **Assertion :** Oil and fat containing food items are flushed with nitrogen.

Reason : The food is surrounded by an atmosphere of nitrogen then rancidity stops as no oxygen comes in contact with the food. [1]

Ans : (a) If assertion is true and reason is correct explanation of assertion.

14. **Assertion :** Electrolysis of an aqueous solution of sodium chloride is called chlor-alkali process.

Reason : After electrolysis of an aqueous solution of sodium chloride, the products formed are chlor for chlorine and alkali for sodium hydroxide. [1]

Ans : (a) If assertion is true and reason is correct explanation of assertion.

Section B

15. Write balanced chemical equations for the following and identify the type of reaction in each case. [3]

- i. Potassium bromide (aq) + Barium iodide(aq)
 \longrightarrow Potassium iodide (aq) + Barium bromide (s).
 ii. Zinc carbonate (s) \longrightarrow Zinc oxide (s)
 + Carbon dioxide (g)
 iii. Hydrogen (g) + Chlorine (g)
 \longrightarrow Hydrogen chloride (g)

Ans :

- i. $2\text{KBr}(\text{aq}) + \text{BaI}_2(\text{aq}) \longrightarrow 2\text{KI}(\text{aq}) + \text{BaBr}_2(\text{s})$
 It is a double displacement (precipitation) reaction.
 ii. $\text{ZnCO}_3(\text{s}) \longrightarrow \text{ZnO}(\text{s}) + \text{CO}_2(\text{g})$
 It is a chemical decomposition reaction.
 iii. $\text{H}_2(\text{g}) + \text{Cl}_2(\text{g}) \longrightarrow 2\text{HCl}(\text{g})$
 It is a chemical combination reaction.

16. What is the importance of pH to aquatic life ? [3]

Ans :

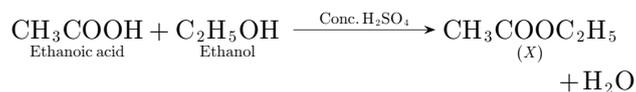
Most of the aquatic life flourishes, if the pH of water is within a narrow range of 7 and 7.8. If polluted water from factories, sewage or any other source flows into water bodies having pH less than 7 and 7.8, it lowers the pH to 6 or less, because polluted water is generally acidic.

With the drop in pH of water, the aquatic life dies. Thus, it is very important that acidic water should not be discharged in natural water bodies.

or

A carboxylic acid $\text{C}_2\text{H}_4\text{O}_2$ reacts with an alcohol in the presence of H_2SO_4 to form a compound 'X'. The alcohol on oxidation with alkaline KMnO_4 followed by acidification gives the same carboxylic acid, $\text{C}_2\text{H}_4\text{O}_2$. Write the name and structure of (i) carboxylic acid, (ii) alcohol and (iii) the compound X. [3]

Ans :



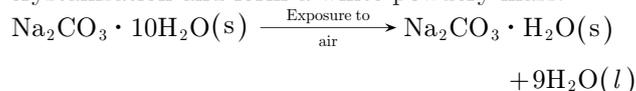
It is clear from the above two equations, that

- i. Carboxylic acid – Ethanoic acid
 ii. Alcohol – Ethanol
 iii. Compound X – Ethyl acetate.

17. What is the formula of washing soda crystals ? What happens when washing soda crystals are exposed to air ? Write a chemical equation in support of your answer [3]

Ans :

The chemical formula of washing soda crystals is $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$. When washing soda crystals are exposed to air, they slowly lose their water of crystallisation and form a white powdery mass.



18. i. What is the difference between self pollination and cross pollination?
 ii. What happens to the pollen which falls on a suitable stigma? Explain. [3]

Ans :

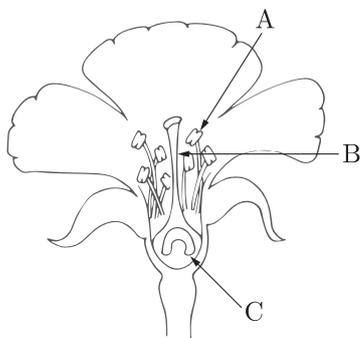
- i. The difference between self pollination and cross pollination on are following:

	Self Pollination	Cross Pollination
1.	Self pollination occurs within a flower or between two flowers of the same plant.	Cross pollination occurs between two flowers borne on different plants of same species.
2.	Flowers are neither attractive, nor they produce nectar.	Flowers attract insects by various means like coloured petals, nectar, etc.
3.	Pollen grains are produced in small number.	Pollen gains are produced in large numbers.
4.	No wastage of pollen grains occurs, thus economical.	Wastage of pollen grains occurs, hence uneconomical.

- ii. After the pollen grains are deposited on the suitable stigma, the pollen grains absorb water and sugar from the surface of stigma and swell up. A tube grows out of the pollen grain and travel through the style to reach the ovary. The pollen tube carrying two male gametes which liberated inside the embryo sac. One male gamete fuses with the egg to form zygote. The other male gamete fuses with the secondary nucleus to form the endosperm, which provides nourishment to the growing embryo.

or

Name the parts A, B and C shown in the given diagram and state one function of each part.



Ans :

A=Anther; Each anther contains two pollen sacs. Many pollen grains are present in each pollen sac. In the pollen grains, male gametes develop.

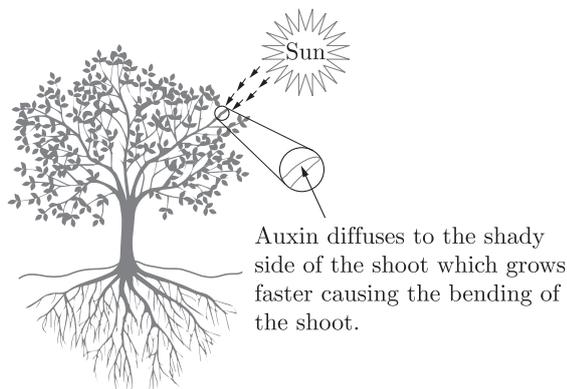
B=Style; style holds stigma.

C= Ovule; Each ovule contains an egg cell. Fertilisation takes place inside it.

19. Name the hormone synthesized at the shoot tips. How does it help the plant to respond to light? [3]

Ans :

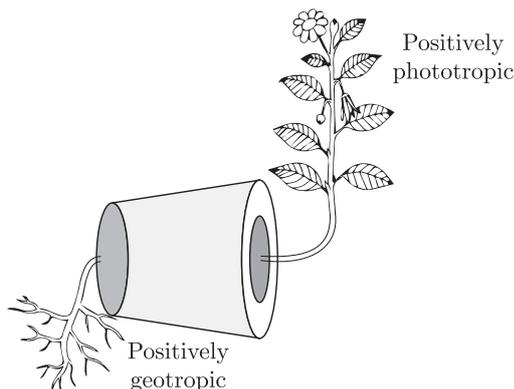
Auxin is synthesized at the shoot tips when growing plant detects light and helps the cells to grow longer. When light is coming from one side of the plant, auxin diffuses towards the shady side of the shoot. This concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light. Thus, the plant appears to bend towards light.



20. What is (i) phototropism and (ii) geotropism ? With a labelled diagram describe and show that light and gravity change the direction in which plant parts grow. [3]

Ans :

- i. The movement of plant parts in response to sunlight is called phototropism.
- ii. The movement of plant parts in response to gravitational force is called geotropism.



Experiment : Take a potted plant with a small seedling. Keep the pot horizontally, as shown in the figure, in a lighted area. Leave it for a few days, taking the precaution that the seedling does not dry. Observe what happens.

You will find that the shoot has grown upwards. Now, take out the seedling from the pot and note what has happened to the root. You will find that the root has grown downwards.

21. Leaves of a healthy potted plant were coated with vaseline. Will this plant remain healthy for long? Give reasons for your answer. [3]

Ans :

This plant will not remain healthy for a long time because:

- (a) It will not get oxygen for respiration.
- (b) It will not get carbon dioxide for photosynthesis.
- (c) Upward movement of water and minerals would be hampered due to lack of transpiration.

22. i. Nichrome wire of length L and radius R has resistance of 10Ω . How would the resistance of the wire change when :

- (a) Only length of the wire is doubled ?
- (b) Only diameter of the wire is doubled ?

Justify your answer.

ii. Why element of electrical heating devices are made-up of alloys ? [3]

Ans :

i. $R = 10 \Omega$ of length L, and area of cross-section A.

- (a) When only length is doubled $R' = 20 \Omega$
- (b) When only diameter is doubled.

$$R \propto \frac{1}{A} \propto \frac{1}{D^2}$$

$$R'' \propto \frac{1}{(2D)^2}$$

$$R'' \propto \frac{1}{4D^2}$$

$$R'' = \frac{R}{4}$$

$$R'' = \frac{10}{4} = 2.5 \Omega$$

ii. Alloys have high resistivity more than their constituent pure metals and do not oxide at high temperature easily.

23. i. Why are conductors of electric heating devices, such as toasters and electric iron made of an alloy, rather than pure metals ?
- ii. Why is an ammeter likely to burn, if connected in parallel ? [3]

Ans :

i. It is because, the alloys of metals have higher resistivity as compared to the pure metals.

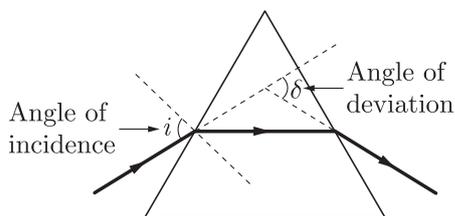
Thus, when alloys are used as conductors of heating devices, they easily convert electric energy into heat energy.

ii. Ammeter by itself is a very low resistance instrument. Thus, when connected in a parallel circuit, most of the current will flow through it, and as a result, its coil burns.

24. i. Define dispersion of light.
 ii. Draw a ray diagram to show the path of a light ray that enters the glass prism obliquely. Label on it the angle of incidence and angle of deviation. [3]

Ans :

- i. The phenomenon due to which a white light splits into its component colours, when passed through a prism is called dispersion.
 ii.



or

The near point of a person suffering from hypermetropia is 75 cm. Calculate the focal length and power of the lens required to enable him to read the newspaper which is kept at 25 cm from the eye. [3]

Ans :

Given,

$$u = -25 \text{ cm (For normal eye)}$$

$$v = -75 \text{ cm}$$

$$\begin{aligned} \text{As we know that, } \frac{1}{f} &= \frac{1}{v} - \frac{1}{u} = \frac{1}{-75} - \frac{1}{-25} \\ &= \frac{-1+3}{75} = \frac{2}{75} \end{aligned}$$

Thus, focal length of the lens,

$$f = \frac{75}{2} \text{ cm} = \frac{75}{2 \times 100} \text{ m} = \frac{3}{8} \text{ m}$$

$$\begin{aligned} \text{Power of the lens, } P &= \frac{1}{f \text{ (in m)}} = \frac{1}{3/8} = \frac{8}{3} \text{ D} \\ &= 2.67 \text{ D} \end{aligned}$$

Section C

25. i. Distinguish between ionic and covalent compounds under the following properties
 (a) Strength of forces between constituent elements.
 (b) Solubility of compounds in water
 (c) Electrical conduction in substances.
 ii. Explain how the following metals are obtained from their compounds by the reduction process:
 (a) Metal M which is in the middle of the reactivity series.
 (b) Metal N which is high up in the reactivity series.

Give one example of each type. [5]

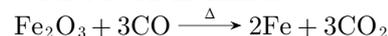
Ans :

i.

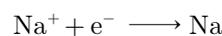
	Ionic Compounds	Covalent Compounds
1.	Strength of forces between the constituent elements is very large.	Strength of forces between the constituent elements is very small.

	Ionic Compounds	Covalent Compounds
2.	Ionic compounds are generally soluble in water and insoluble in covalent compounds.	Covalent compounds are generally insoluble in water, but soluble in covalent compounds.
3.	Ionic compounds in fused state or aqueous solution are good conductors of electricity.	Covalent compounds are bad conductors of electricity.

- ii. (a) Metal 'M' in the middle of reactivity series may be iron. It is obtained by the reduction of its oxide with carbon monoxide.



- (b) Metal 'N' high up in the reactivity series may be sodium. It is obtained by passing electric current through fused sodium chloride.



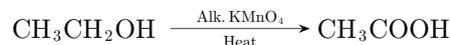
or

Explain the given reactions with examples :

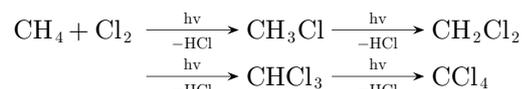
- i. (a) Oxidation reaction
 (b) Substitution reaction
 (c) Addition reaction
 ii. What is glacial acetic acid ? Why is it named so ? State its two uses. [5]

Ans :

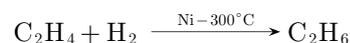
- i. (a) Ethanol is oxidised to ethanoic acid in the presence of alkaline KMnO_4 on heating.



- (b) In the presence of sunlight, chlorine replaces all the atoms of hydrogen in a hydrocarbon.



- (c) Ethene add hydrogen in presence of heated nickel or palladium to form ethane.



- ii. Ethanoic acid freezes below 16.5°C to form an icy mass, which is known as glacial acetic acid. It looks icy so, named glacial acetic acid. Its two uses are
 (a) In the formation of vinegar.
 (b) As a solvent for a large number of organic compounds.

26. State the reactions, if any of the following metals react with lead nitrate solution. In case the reaction takes place, support it by a chemical equation.

- (i) Silver, (ii) Zinc, (iii) Copper, and (iv) Iron. [5]

Ans :

- i. Silver does not react with lead nitrate solution.
 ii. Zinc reacts with lead nitrate solution and displaces lead metal.

$$\text{Pb}(\text{NO}_3)_2(\text{aq}) + \text{Zn}(\text{s}) \longrightarrow \text{Zn}(\text{NO}_3)_2(\text{aq}) + \text{Pb}(\text{s})$$

 iii. Copper does not react with lead nitrate solution.
 iv. Iron reacts with lead nitrate solution and displaces

lead metal.



27. What is the significance of photosynthesis ? [5]

Ans :

Photosynthesis is the most important and basic process which sustains life on this earth. It has manifold significance such as :

- i. It synthesises food from inorganic substances. This food becomes the ultimate source of energy and life for all the living organisms.
- ii. It is the only known method which releases oxygen in the atmosphere and keeps the O_2 concentration constant. The consumption of O_2 by living organisms during respiration is compensated by photosynthesis.
- iii. It also helps to keep the CO_2 concentration in the atmosphere constant. CO_2 being released as a result of respiration by living organisms is incorporated into glucose during photosynthesis.
- iv. Coal, petroleum and natural gas are fossil fuels. These have been produced by the application of heat and compression on the dead plants.
- v. All useful plant products such as timber, rubber, resins, drugs, oils, fibres, etc., are derived from the process of photosynthesis.

Make a comparison between photosynthesis and respiration.

	Photosynthesis	Respiration
1.	It takes place only in the presence of light.	It occurs in all the tissues both during day and night.
2.	Only green cells of plants can perform photosynthesis.	This occurs in all the cells of an organism.
3.	It takes place inside chloroplast.	Aerobic respiration involves mitochondria and cytoplasm.
4.	It is an anabolic process in which complex compounds (sugars) are broken down into simpler (CO_2 and H_2O) compounds.	It is a catabolic process in which complex compounds (sugars) are formed from the inorganic substances (CO_2 and H_2O).

28. Set up an experiment to show that carbon dioxide is necessary for photosynthesis. [5]

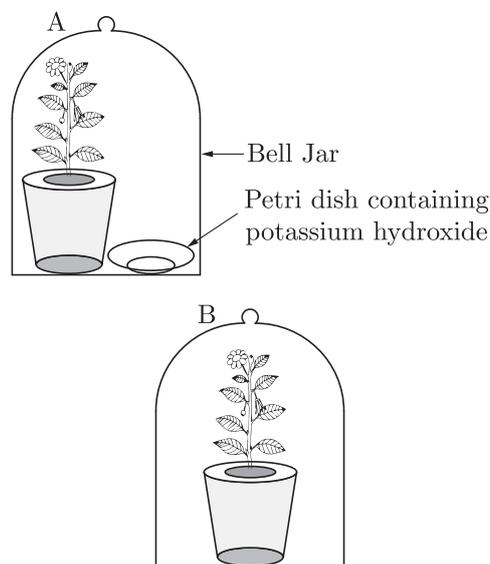
Ans :

To demonstrate that CO_2 is necessary for photosynthesis

- i. Take two potted plants and keep them in a dark room for three days.
- ii. Now place them on separate glass plates. Keep a Petri dish containing potassium hydroxide by the side of only one plant.
- iii. Leave the other plants as such. Cover both the plants with separate bell jars. Make them airtight by applying Vaseline.
- iv. Keep the plants in sunlight for about 4 hours. Now remove a leaf from each plant and test for

the presence of starch.

- v. The leaf from the plant placed in the jar without potassium hydroxide becomes blue black while there is no change in the leaf from the plant placed in the jar with potassium hydroxide. It is because potassium hydroxide absorbs CO_2 inside the bell jar. Hence, photosynthesis does not occur in the absence of CO_2 .



or

Explain the process of gaseous exchange in human beings.

Ans :

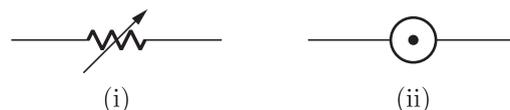
The respiratory system in human begins with the nasal cavities lodged inside the nose. They open into the internal nostrils which then allow the air into the pharynx.

The pharynx leads to the trachea or the wind pipe which in turn is supported by a horse shoe shaped cartilage.

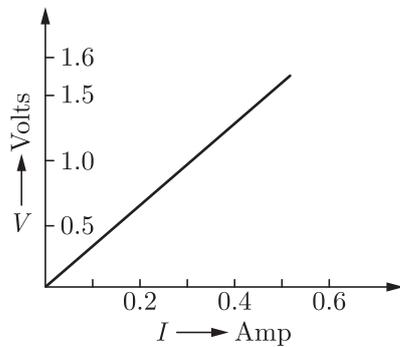
At the start of the trachea is a slit called 'glottis' that is covered by a cartilaginous flap of the skin called epiglottis.

The trachea runs down and divides into two bronchi which branch into bronchioles. The two bronchi enter the lungs and branch into numerous bronchioles with each bronchiole terminating in an alveolar sac. The alveoli are the tiny one cell thick sac like structures covered by blood capillaries to facilitate rapid gaseous exchange.

29. i. What do the following symbols mean in the circuit diagrams ?



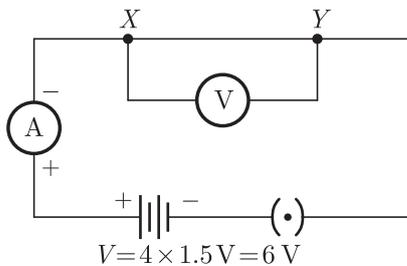
- ii. An electric circuit consisting of 0.5 m long nichrome wire XY an ammeter, a voltmeter, four cells of 1.5 V each and plug key were set-up.



- (a) Draw the diagram of this electric circuit to study the relation between potential difference maintained between the points X and Y and electric current flowing through XY.
- (b) The graph shown is plotted between V and I values. What would be the values of $\frac{V}{I}$ ratio, when potential difference is 0.8 V, 1.2 V and 1.6 V. What conclusion you draw from these values? [5]

Ans :

- i. (i) Variable resistance (ii) Closed key
 ii. (a)



- (b) $\frac{V}{I}$ when $V = 0.8 \text{ V}$ $\therefore \frac{V}{I} = \frac{0.8}{0.3} = 2.67$
 $\frac{V}{I}$ when $V = 1.2 \text{ V}$
 $\frac{V}{I} = \frac{1.2}{0.4} = 3$

When $V = 1.6 \text{ V}$ $\frac{V}{I} = \frac{1.6}{0.6} = 2.67$

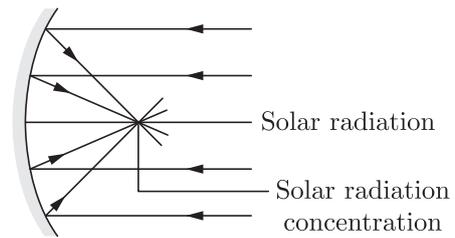
These values verify the Ohm's law.

30. i. Define real image of an object.
 ii. Name the mirror that
 (a) can give real as well as virtual image of an object.
 (b) will always give virtual image of same size of an object.
 (c) will always give virtual and diminished image of an object.
 (d) is used by a doctor in examining teeth.
 iii. With the help of a ray diagram explain the use of concave mirror as solar concentrators. [5]

Ans :

- i. Real image of an object is the image formed due to actual intersection of light rays coming from object through an optical device. It can always be taken on screen.
 ii. (a) concave mirror (b) plane mirror (c) convex mirror (d) concave mirror
 iii. Concave mirrors can concentrate parallel light rays (from distant object e.g. sun) at focus. This

property of the concave mirror is used in solar concentrators as high concentration of the sun rays generate high amount of heat farther can be used as a heat source. This diagram below shows the concentration of sun ray.

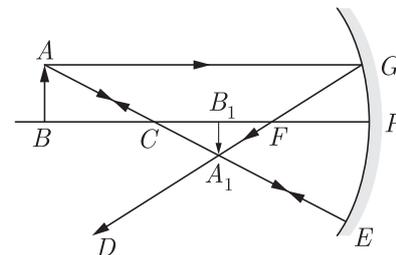


or

- i. Define Principal focus of a spherical mirror
 ii. For what position of the object does a concave mirror form a real, inverted and diminished image of the object? Draw the ray diagram.
 iii. An object 4 cm high is placed at a distance of 6 cm in front of a concave mirror of focal length 12.0 cm. Find the position of the image formed. [5]

Ans :

- i. The point where light rays coming parallel to the principal axis after reflection from the mirror meet is called principal focus of a spherical mirror.
 ii. When an object is placed beyond centre of curvature of a concave mirror then a real, inverted and diminished image of the object is formed.



- iii. $f = -12 \text{ cm}$, $u = -6 \text{ cm}$, $v = ?$

$$\text{Now, } \frac{1}{u} + \frac{1}{v} = \frac{1}{f} \Rightarrow \frac{1}{v} = \frac{1}{f} - \frac{1}{u}$$

$$\frac{1}{v} = \frac{1}{-12} - \frac{1}{-6} = \frac{-1+2}{12} = \frac{1}{12}$$

$$v = 12 \text{ cm}$$

Thus, image will form at a distance of 12 cm behind the mirror.

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