

CLASS X (2019-20)
SCIENCE (CODE 086)
SAMPLE PAPER-16

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. Define pollination. [1]

Ans : Pollination is the act of transferring pollen grains from the anther of a flower to the stigma of a flower.

2. Why does hard water produce scum with soaps? [1]

Ans : The sodium salts present in soaps are converted to their corresponding calcium and magnesium salts which are precipitated out and are known as scum.

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

Wherever we look, we find plastics-be it a food packet, a toy, storage packing, any furniture or an electronic item. According to UN estimates, every year the world uses 500 billion plastic bags and half of this plastic is single-use plastic such as plastic bags, straws, cups, plates and bottles. Plastic is currently the biggest environmental concern. Plastic waste takes a lot of time to decompose naturally. It is harmful for animals who might eat it and can cause severe air pollution on burning. In oceans, pollution is mainly caused due to plastic wastes. Each year, at least eight million tonnes of plastic wastes are released into the oceans which means a full garbage truck every minute. This is damaging the marine life and also threatening human health.

- 3.1 Why has there been huge hue and cry against the use of single-use plastics? [1]

Ans : Non-biodegradable nature;

- 3.2 The pH of ocean water as measured using pH paper is found to be 5. What does this pH tell us about the ocean water? [1]

Ans : The pH 5 tells us that ocean water has become highly acidic.

- 3.3 Based on the data shown in the graph that follows, which industrial sector produces the most plastic waste? Suggest the alternative that can be used in place of plastic in this sector? [1]

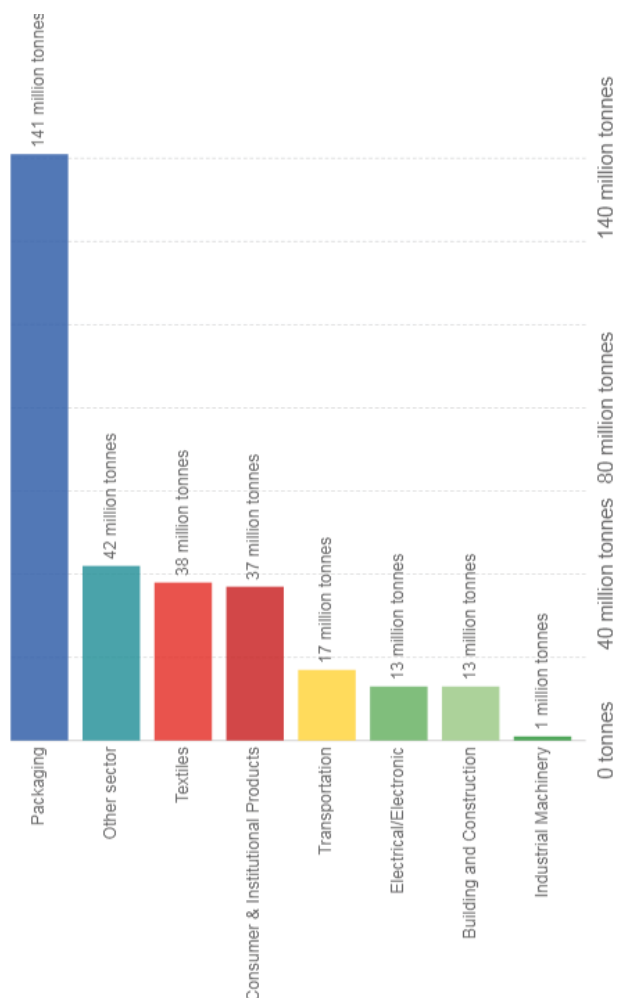


Fig: Plastic waste generation by industrial sector, 2015. Global plastic waste generation by industrial sector, measured in tonnes per year

- 3.4 **Ans :** Packaging sector produces the maximum plastic waste. Paper and cardboard can be used in place of plastic in this sector as these are reusable, recyclable and biodegradable.

- 3.4 Expand the five R's that help in reducing plastic wastes. [1]

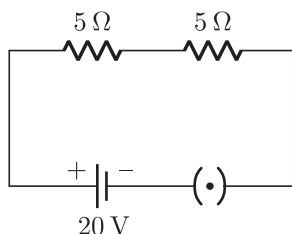
Ans : **Refuse:** To say NO to single use plastic bags;
Reduce: To reduce the use of plastic bags;
Reuse: To use plastic bottles, container etc.

again and again; **Repurpose:** To use the already used plastic object for any other useful purpose; **Recycle:** To collect plastic waste and make new things instead of synthesising fresh plastic.

4. Question numbers 4.1-4.4 are based on the given table, circuit diagram and the related studied concepts. Analyse the table and circuit diagram to answer the questions that follow.

Table: Resistivities of some substances (at 20 °C)

Substance	Resistivity
Copper	$1.69 \times 10^{-8} \Omega\text{m}$
Mercury	$94.0 \times 10^{-8} \Omega\text{m}$
Iron	$6.84 \times 10^{-8} \Omega\text{m}$
Nichrome	$110 \times 10^{-8} \Omega\text{m}$
Paper (Dry)	$10^{12} \Omega\text{m}$
Nickel	$6.84 \times 10^{-8} \Omega\text{m}$



4.1 The resistivity of which substance given in the table is best suited for making wires for the transmission of electricity in the given circuit? [1]

Ans : Copper wires are used for the transmission of electricity because it has very low resistivity meaning that it is a good conductor of electricity.

4.2 Which type of circuit is represented in the above circuit diagram? [1]

- (a) Series circuit
- (b) Parallel circuit
- (c) Simple circuit
- (d) Both (i) and (ii)

Ans : (a) A resistor of 5Ω is connected in series with another resistor of 5Ω . Hence, the circuit diagram represents a series circuit.

4.3 Which of the following substances is attracted by a magnet? [1]

- (a) Nickel
- (b) Mercury
- (c) Copper
- (d) Paper

Ans : (a) Nickel is attracted by the magnet.

4.4 How much current is flowing through the electrical circuit given above? [1]

Ans :

Total Resistance, $R = R_1 + R_2 = 5 + 5 = 10 \Omega$
 Potential difference, $V = 20$ Volts;
 Current (I) in circuit = ?
 Applying Ohm's law, we get $\frac{V}{I} = R$ or $I = \frac{20}{10} = 2$ A

5. Identify the wrong sequence of the elements in a group. [1]

- (a) Ca, Sr, Ba
- (b) N, P, As
- (c) Cu, Au, Ag
- (d) Cl, Br, I

Ans : (c) Cu, Au, Ag

6. Which of the following is the most appropriate reaction for aerobic respiration? [1]

- (a) $\text{Glucose} \xrightarrow{\text{mitochondria}} \text{Pyruvate} \xrightarrow{\text{cytoplasm}} \text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$
- (b) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} \xrightarrow{\text{mitochondria}} \text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$
- (c) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} + \text{Energy} \xrightarrow{\text{mitochondria}} \text{CO}_2 + \text{H}_2\text{O}$
- (d) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} + \text{Energy} \xrightarrow{\text{mitochondria}} \text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$

Ans : (d) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} + \text{Energy} \xrightarrow{\text{mitochondria}} \text{CO}_2 + \text{H}_2\text{O} + \text{Energy}$

or

Which of the following is the correct sequence of anaerobic reaction in yeast? [1]

- (a) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} \xrightarrow{\text{mitochondria}} \text{Ethanol} + \text{CO}_2$
- (b) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} \xrightarrow{\text{cytoplasm}} \text{Lactic acid}$
- (c) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} \xrightarrow{\text{mitochondria}} \text{Lactic acid}$
- (d) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} \xrightarrow{\text{cytoplasm}} \text{Ethanol} + \text{CO}_2$

Ans : (d) $\text{Glucose} \xrightarrow{\text{cytoplasm}} \text{Pyruvate} \xrightarrow{\text{cytoplasm}} \text{Ethanol} + \text{CO}_2$

7. On gradually adding dil. FeSO_4 to acidified KMnO_4 solution, the light purple colour of the solution fades and finally disappears.

The correct explanation for the above observation is [1]

- (a) FeSO_4 is an oxidising agent, it oxidises KMnO_4
- (b) The colour disappears due to dilution
- (c) KMnO_4 is an unstable compound
- (d) KMnO_4 is an oxidising agent, it oxidises FeSO_4

Ans : (d) KMnO_4 is an oxidising agent, it oxidises FeSO_4

8. Pick the right combination of terms which has no fossil fuel. [1]

- (a) Wind, ocean and coal
- (b) Kerosene, wind and tide
- (c) Wind, wood, Sun
- (d) Petroleum, wood, Sun

Ans : (c) Wind, wood, Sun

9. Consider the following statements:

- A. Pyruvate can be converted into ethanol and carbon dioxide by yeast.
- B. Fermentation takes place in aerobic bacteria.
- C. Fermentation takes place in mitochondria.
- D. Fermentation is a form of anaerobic respiration.

The correct statements are [1]

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

Ans : (b) A and D only

10. The chemical reaction in which photo-decomposition occurs is [1]

- (a) $2\text{H}_2\text{O}(l) \longrightarrow 2\text{H}_2(g) + \text{O}_2(g)$

- (b) $2\text{HCl}(\text{aq}) \longrightarrow \text{HCl}(\text{g}) + \text{Cl}(\text{g})$
- (c) $\text{CaCO}_3(\text{s}) \longrightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
- (d) $2\text{AgCl}(\text{s}) \longrightarrow 2\text{Ag}(\text{s}) + \text{Cl}_2(\text{g})$

Ans : (d) $2\text{AgCl}(\text{s}) \longrightarrow 2\text{Ag}(\text{s}) + \text{Cl}_2(\text{g})$

or

Which of the following is a physical change?

- (a) Formation of curd from milk
- (b) Ripening of fruits
- (c) Getting salt from sea water
- (d) Burning of wood

Ans : (c) Getting salt from sea water

11. A convex lens forms a virtual image when an object is placed at a distance of 18 cm from it. The focal length must be [1]

- (a) less than 18 cm.
- (b) greater than 18 cm.
- (c) greater than 36 cm.
- (d) less than 36 cm.

Ans : (b) greater than 18 cm.

or

Refractive index of diamond with respect to glass is 1.6. If the absolute refractive index of glass is 1.5, then the absolute refractive index of diamond is

- (a) 1.4
- (b) 2.4
- (c) 3.4
- (d) 4.4

Ans : (b) 2.4

Given, ${}_d\mu_g = 1.6$ and $\mu_g = 1.5$

Refractive index of diamond with respect to glass

$$= \frac{\text{Absolute refractive index of diamond}}{\text{Absolute refractive index of glass } (\mu_g)}$$

So, absolute refractive index of diamond

$$= \text{Refractive index of diamond glass}$$

$$({}_d\mu_g) \times \text{Absolute refractive index of glass } (\mu_g)$$

$$\mu_d = 1.6 \times 1.5 = 2.4$$

12. Electrical impulse travels in a neuron from [1]

- (a) Dendrite → axon → axonal end → cell body
- (b) Cell body → dendrite → axon → axonal end
- (c) Dendrite → Cell body → axon → axonal end
- (d) Axonal end → axon → cell body → dendrite

Ans : (c) Dendrite → Cell body → axon → axonal end

For question numbers 13 and 14, two statements are given—one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below.

- (a) Both A and R are true and R is correct explanation of the assertion.
- (b) Both A and R are true but R is not the correct explanation of the assertion.
- (c) A is true but R is false.
- (d) A is false but R is true.

13. Assertion : The bouncing back of light in the same medium on striking the surface of an object is called the reflection of light.

Reason : The light propagates along a straight-line path. [1]

Ans : (b) Both A and R are true but R is not the correct explanation of the assertion.

14. Assertion : Silicon is a metalloid (or semi-metal).

Reason : Silicon looks like a metal and it is ductile and good conductor of heat and electricity. [1]

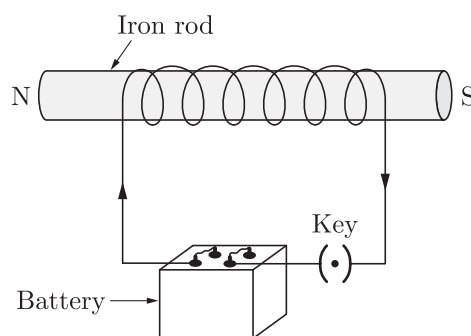
Ans : (c) A is true but R is false.

Section B

15. What is an electromagnet? How can you make an electromagnet in your school laboratory? [3]

Ans :

1. An electromagnet is a rod of magnetic material placed inside a current carrying solenoid. This rod starts behaving as a magnet when electric current flows through the solenoid. The rod loses its magnetism as soon as the current through the solenoid is switched off.



2. Wrap a coil of copper wire on an iron rod as shown in the figure. Connect the ends of the wire to a plug key and a battery. The iron rod will start behaving as a magnet on passing the current through the coil of copper wire.

or

State the factors on which the strength of an electromagnet depends. Differentiate between an electromagnet and a permanent magnet. [3]

Ans :

The strength of an electromagnet depends on the following factors:

- (a) Strength of the current: Greater the magnitude of the current, greater is the strength of an electromagnet.
- (b) Number of turns in the coil: More the number of turns in the coil, greater is the strength of an electromagnet.
- (c) Nature of the material used as the core: Soft iron produces a very strong magnetic field.

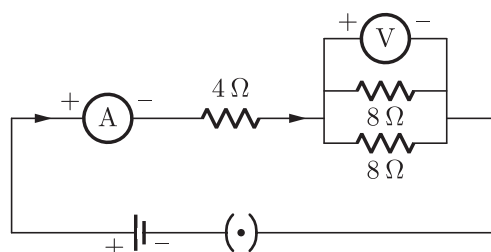
Differences between a permanent magnet and an electromagnet

	Permanent Magnet	Electromagnet
(i)	It shows permanent magnetism.	It loses its magnetism on switching off the current.
(ii)	Its polarity cannot be changed.	The polarity can be changed by reversing the direction of current.

	Permanent Magnet	Electromagnet
(iii)	Its strength cannot be changed.	Its strength can be changed by changing the current through the coil.

16. Draw a circuit diagram of an electric circuit containing a cell, a key, an ammeter, a resistor of $4\ \Omega$ in series with a combination of two resistors $8\ \Omega$ each) in parallel and a voltmeter across the parallel combination. Each of them dissipate maximum energy and can withstand a maximum power of 16W without melting. Find the maximum current that can flow through the three resistors. [3]

Ans :



$$\text{Power } P = I^2R$$

$$I = \sqrt{\frac{P}{R}}$$

$$\therefore \text{Maximum current through } 4\ \Omega \text{ resistor} = \sqrt{\frac{P}{R}}$$

$$= \sqrt{\frac{16\text{ W}}{4\ \Omega}} = 2\text{ A}$$

$$\therefore \text{Maximum current through each } 8\ \Omega \text{ resistor}$$

$$= \frac{1}{2} \times 2\text{ A} = 1\text{ A}$$

17. In the context of electrolysis of water, answer the following questions:

- Name the gas collected at the anode and the cathode.
- Why is the volume of gas collected at one electrode double than the other?
- What would happen if dil H_2SO_4 is not added to water? [3]

Ans :

- (i) In the electrolysis of water, the gas collected at the cathode is hydrogen.
(ii) The gas collected at anode is oxygen.
- The gas which is collected in one test tube is double the amount of the other during the electrolysis of water is hydrogen. This is because water contains two parts of hydrogen element as compared to one part of oxygen element by volume.
- Pure water is a bad conductor of electricity, and by adding drops of sulphuric acid we make it a good conductor of electricity. Without adding dil. sulphuric acid, slow electrolysis would take place.

18. Differentiate between the arrangement of elements in the Mendeleev's Periodic Table and the Modern Periodic Table. [3]

Ans :

	Mendeleev's Periodic Table	Modern Periodic Table
(i)	The elements were arranged according to increasing atomic masses.	The elements were arranged according to increasing atomic numbers.
(ii)	Position of isotopes was not justified.	There was no problem in the placing of isotopes.
(iii)	Position of hydrogen was not justified because it resembles both with alkali metals and halogens.	Hydrogen has been given a unique position due to its resemblance with alkalis and halogens.

19. Explain the, ways in which glucose is broken down in the absence of oxygen. [3]

Ans :

The process by which glucose is broken down in the absence of air is also called anaerobic respiration. There are two ways of anaerobic breakdown of glucose. First step is breakdown of glucose molecule into pyruvate which takes place in cytoplasm. This step is common in both the ways.

- The anaerobic breakdown in bacteria is called fermentation. During fermentation, pyruvate is broken down into ethyl alcohol and carbon dioxide.
- When there is lack of oxygen in our muscle cells, pyruvate is broken down to lactic acid. Very less amount of energy is released in both the cases.

or

List three differences between arteries and veins. [3]

Ans :

- Arteries carry blood away from the heart while veins carry blood to the heart.
- Arteries are thick-walled while veins are thin-walled.
- Valves are present in veins to ensure that blood flows in one direction only while valves are absent in arteries.
- Arteries carry oxygenated blood except pulmonary artery while veins carry de-oxygenated blood except pulmonary vein.

20. How do Mendel's experiments show that traits may be dominant or recessive? [3]

Ans :

Mendel conducted a mono-hybrid cross with pea plants, and he observed that one of the contrasting characters disappears in F_1 generation. This character reappears in F_2 generation (obtained by selfing F_1) in just 25% of the progeny.

Mendel concluded that the character which expresses itself in F_1 is the dominant character while the character which is not expressed though present, in F_1 individuals is recessive. This recessive character is expressed only in its pure form i.e. in 25% of F_2 individuals.

21. Rohit focused the image of a candle flame on a white screen using a convex lens. He noted down the position of the candle, the screen and the lens as under:

Position of candle- 26.0 cm
 Position of convex lens- 50.0 cm
 Position of screen- 74.0 cm

- What is the focal length of the convex lens?
- Where will the image be formed if he shifts the candle towards the lens at a position of 38 cm?
- Draw a ray diagram to show the formation of the image in case (b) as said above? [3]

Ans :

(a) Here, $u = (50 - 26) \text{ cm} = 24 \text{ cm};$
 $v = (74 - 50) \text{ cm} = 24 \text{ cm};$
 $f = ?$

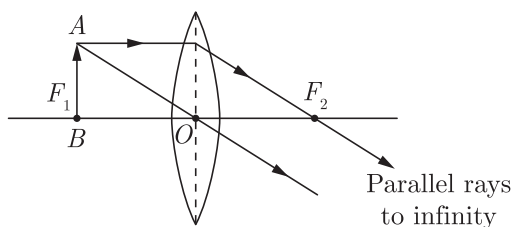
Since in this case $u = v$, the object is placed at $2F$

$\therefore 2f = 24 \text{ cm}$
 $f = \frac{24 \text{ cm}}{2} = 12 \text{ cm}$

- (b) On shifting the object at 38 cm
 $u = (50 - 38) \text{ cm} = 12 \text{ cm}$
 i.e. candle is at F

\therefore Image is formed at infinity.

(c)



(Refracted parallel rays meet at infinity. So, image is formed at infinity.)

22. "pH has a great importance in our daily life". Explain by giving three examples. [3]

Ans :

- Plants and animals are pH sensitive. Living organisms can survive only in a narrow range of pH change.
- Plants require a specific pH range for their healthy growth.
- Our stomach produces hydrochloric acid that helps in the digestion of food. During digestion, if the stomach produces too much acid, we may experience pain and irritation.
- Change in pH causes tooth decay. Tooth enamel gets corroded when the pH in the mouth is below 5.5.
- Bee-sting leaves an acid which causes pain and irritation. Applying a mild base like baking soda on the stung area provides relief.

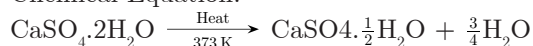
or

A compound which is prepared from gypsum has the property of hardening when mixed with the proper quantity of water. Identify the compound and write its chemical formula. Write the chemical equation for its preparation. Mention one use of the compound. 3

Ans :

- The name of the compound is Plaster of Paris (calcium sulphate hemihydrate).
- Its chemical formula is $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$

3. Chemical Equation:



- It is used in the hospitals mainly as a plaster for supporting fractured bones in the right position.
- Also used for making toys, statues and decorative items.

23. Why are fossils considered to be important in the study of evolution? Explain two ways by which the age of fossils can be estimated. [3]

Ans :

- Fossils provide evidence in favour of evolution by providing missing links between organisms present in our environment, and species that no longer exist.
- Age of fossils can be estimated by:
 - Reasonably supposing that fossils found closer to the surface are more recent than those found in deeper layers.
 - Detecting the ratios of different isotopes of the same element in the fossil material.

24. Write two different ways of harnessing energy from the ocean. [3]

Ans :

- Tidal energy:** The enormous movement of water between high tides and low tides provides a huge source of energy in the coastal area. This energy of tides can be harnessed, as it can be used to rotate the blades of water turbines. These water turbines drive generators which produce electricity.
- Wave energy:** Kinetic energy of the waves is converted into mechanical energy which causes rotational motion of a turbine to produce electrical energy.

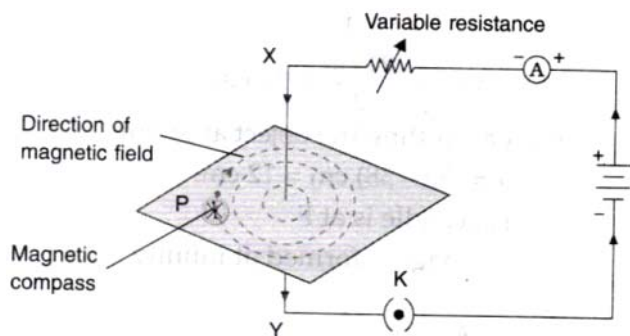
Section C

25. (a) With the help of a labelled circuit diagram, describe an activity to illustrate the pattern of the magnetic field lines around a current carrying straight conducting wire.
- (b) Name the rule that is used to find the direction of magnetic field associated with a straight current carrying conductor.
- (c) Is there a similar magnetic field produced around a thin beam of moving (i) alpha particles and, (ii) neutrons? Justify your answer. [5]

Ans :

- (a) **Activity** (Refer circuit diagram given)
 Take a battery (12 V), a variable resistance (or a rheostat), an ammeter (0-5 A), a plug key, and a copper wire that is long, straight and thick. Insert the thick wire through the centre, normal to the plane of a rectangular cardboard. Take care that the cardboard is fixed and does not slide. Connect the copper wire vertically between the points X and Y, as shown in diagram in series with the battery, a plug and a key. Sprinkle some iron filings uniformly on the cardboard. Keep the variable of the rheostat at a fixed position and note the current through the ammeter. Close the key

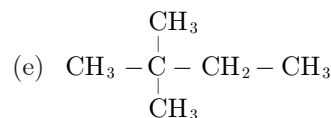
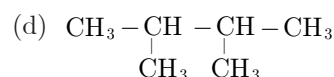
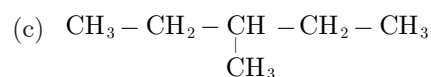
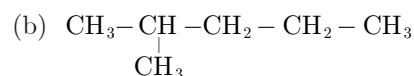
so that a current flows through the wire. Ensure that the copper wire placed between the points X and Y remains vertically straight. Gently tap the cardboard a few times. Observe the pattern of the iron filings. It is observed that the iron filings align themselves showing a pattern of concentric circles around the copper wire. These concentric circles represent the magnetic field lines.



- (b) Right-hand thumb rule
- (c) (i) Yes. Alpha particles, being positively charged, constitute a current in the direction of motion.
- (ii) No. Neutrons, being electrically neutral, constitute no current.

26. You are given six carbon atoms and fourteen hydrogen atoms. In how many ways can one join them to form different molecules of C_6H_{14} . [5]

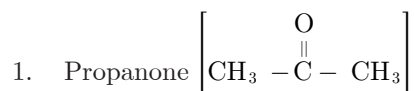
Ans :



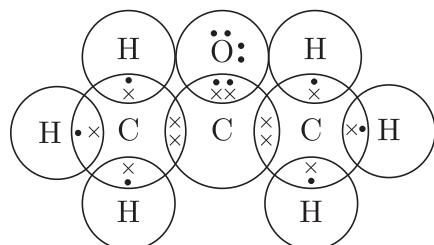
or

Draw the structural formulae of all the possible isomers of the compound with the molecular formula C_3H_6O and also give their electron dot structures. [5]

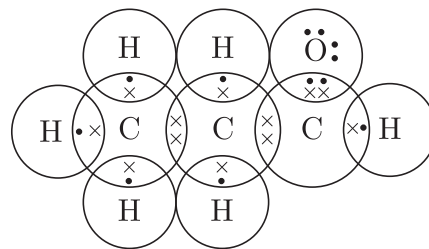
Ans :



3. Electron-dot structure of propanone



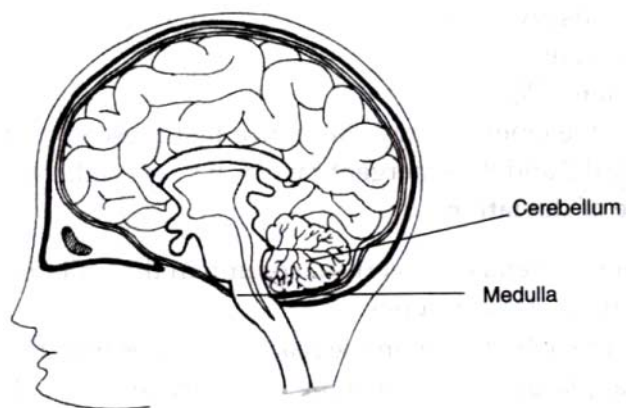
4. Electron dot structure of propanal



27. (a) (i) Draw a neat diagram of the human brain and label medulla and cerebellum.
 (ii) Write the functions of the parts mentioned above.
- (b) "Both overproduction and underproduction of growth hormone leads to disorders in the body." Justify this statement. [5]

Ans :

(a) (i) Diagram of human brain



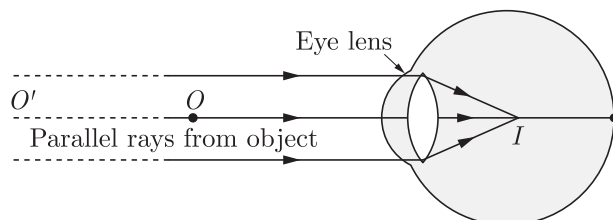
- (ii) • Medulla controls involuntary actions like blood pressure, salivation and vomiting.
 - Cerebellum controls precision of voluntary movements and equilibrium.
- (b) Overproduction of growth hormone leads to gigantism and its underproduction leads to dwarfism.

28. A girl needs a lens of power $-4.5D$ for the correction of her vision.

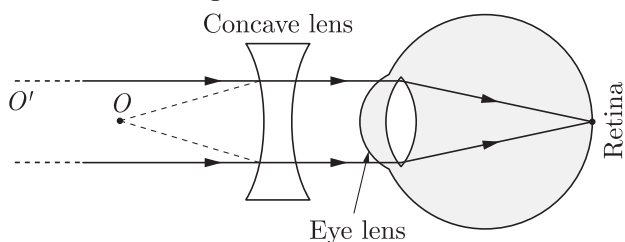
- (a) What kind of defect in vision is she suffering from?
- (b) What are the causes of this defect?
- (c) Draw ray diagrams showing the (i) defected eye and (ii) correction for this defect.
- (d) What is the focal length and nature of the corrective lens? [5]

Ans :

- (a) Myopia
- (b) Causes:
 - (i) Due to excess curvature of eye lens
 - (ii) Elongation of the eye ball
- (c) Ray diagrams
 - (i) Defective vision



(ii) Correction by a concave lens of appropriate focal length



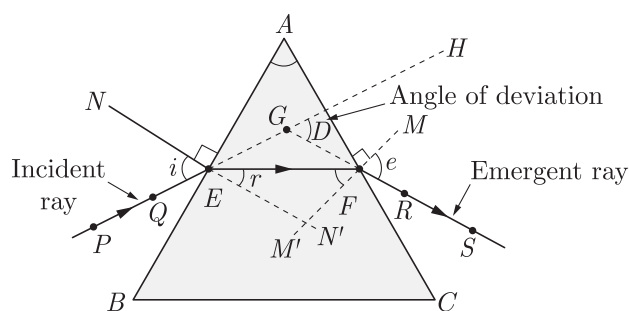
(d) (i) Focal length of the corrective lens:

$$f = \frac{-1}{4.5 \text{ D}} = -0.22 \text{ cm}$$

(ii) Nature : Diverging/Concave
or

Explain the refraction of light through a triangular glass prism using a labelled ray diagram. Define the angle of deviation. [5]

Ans :



As shown in the figure, when a ray of light PQ falls on the first face AB of a triangular glass prism, it gets refracted and bends towards the normal NN' and travels along a path EF. This ray again gets refracted at the second face AC and bends away from the normal MM' and emerges into air along the path RS. Here, PQ is the incident ray and RS is the emergent ray. We notice that these two rays are not parallel to each other. The incident ray PQ and the emergent ray RS, if produced, intersect at G, making an angle D known as the angle of deviation.

29. (a) What is the reactivity series? How does the reactivity series of metals help in predicting the relative activities of various metals?
 (b) Suggest different chemical processes used for obtaining a metal from its oxides for metals in the middle of the reactivity series and metals towards the top of the reactivity series. Support your answer with one example each. [5]

Ans :

- (a) (i) The arrangement of metals in a vertical column in the order of their decreasing reactivity is called reactivity or activity series.
 (ii) A metal placed above hydrogen in the reactivity series will displace hydrogen from water or acids. A metal placed at the top of the reactivity series would displace the metal below it. Thus, a more reactive metal displaces a less reactive metal from its salt solution.
 (b) (i) For obtaining metals that are in the middle of the reactivity series, oxides of such metals can be reduced with coke (carbon) which acts as a reducing agent.

- Example: $2\text{Fe}_2\text{O}_3 + 3\text{C} \longrightarrow 4\text{Fe} + 3\text{CO}_2$
 (ii) For obtaining metals that are high in the reactivity series, their oxides are reduced to metals by the process of electrolysis.
 Example: electrolysis of sodium chloride
 at cathode: $\text{Na}^+ + \text{e}^- \longrightarrow \text{Na}$
 at anode: $2\text{Cl}^- \longrightarrow \text{Cl}_2 + 2\text{e}^-$

30. Describe sexually transmitted diseases and mention the ways to prevent them. [5]

Ans :

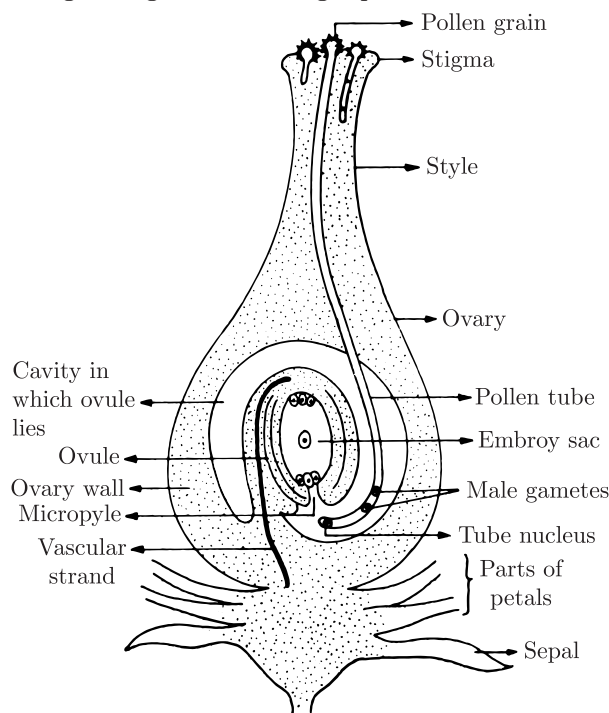
- STD stands for Sexually Transmitted Disease. These are infectious diseases which occur and spread under the following conditions:
 - A person is involved in unsafe sex.
 - A person has multiple sex partners.
 - An infected person is involved in sex with a healthy person.
- Common diseases under STDs are
 Viral - AIDS, Warts
 Bacterial - Gonorrhoea, syphilis
- Methods of prevention of STDs:
 - Spreading awareness through education and media.
 - People should be advised not to have multiple sex partners.
 - Whenever having sex proper safeguards like condoms should be observed.

or

Explain how fertilisation takes place in flowering plants.5

Ans :

The process of fertilisation in flowering plants is a distinguishing feature of angiosperms.



Initially a number of pollen grains are deposited on the sticky stigma. Majority of pollen grains germinate and a number of pollen tubes can be seen growing through the style and reach the ovules. Pollen tube enters the ovule through a microscopic opening known as micropyle. Tip of the pollen tube dissolves to release the two male gametes or sperms inside the embryo

sac. Inside the embryo sac, one of the sperm or male gamete fuses with the egg nucleus. The zygote formed after fertilisation develops into an embryo within the ovule. The ovule gradually develops into a seed.

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