

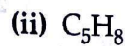
BESTSTUDYTUTORIAL

Solution of Question Paper

4

Section 'A'

1. (i) C_3H_6
2. Leaf notches.



$\frac{1}{2} + \frac{1}{2}$
1

3. (i) Since, refractive index of glass = $\frac{\text{Speed of light in vacuum } (v)}{\text{Speed of light in glass } (o)}$

$$C = \frac{v}{n}$$

$$\frac{4}{3} = \frac{v}{2 \times 10^8}$$

$$v = \frac{4}{3} \times 2 \times 10^8 = 2.6 \times 10^8 \text{ m/s}$$

$$v = 3 \times 10^8 \text{ m/s}$$

2

(ii)

$$\text{Refractive Index of water} = \frac{\text{Speed of light in vacuum}}{\text{Speed of light in water}}$$

$$n = \frac{v}{w}$$

⇒

$$W = \frac{v}{n} = \frac{3 \times 10^8}{3} \times 2$$

$$= 2 \times 10^8 \text{ m/s}$$

2

4. Sustainable management is a resource management technique which aims to conserve the resources, use them efficiently and avoid their misuse for individual purposes such that they are conserved for future.

Reuse is better than recycle because :

- (i) Reuse saves energy by using material again without any changes.
- (ii) Reuse prevents environmental pollution.
- (iii) Reuse saves times as same material is used again.

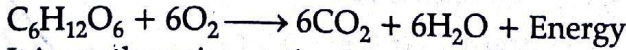
(Any two) 2

5. Nitrogen is an essential element used in the synthesis of proteins and other compounds. It is taken up in the form of inorganic nitrates (or nitrites) or as organic compounds prepared by bacteria from atmospheric nitrogen.

2

6. (i) Ethene ½
- (ii) $C_2H_5OH \xrightarrow[443\text{ K}]{\text{Conc. } H_2SO_4 + \text{Heat}} H_2C=CH_2 + H_2O$ ½
- (iii) Conc. H_2SO_4 act as dehydrating agent which removes water from the reactant. 1
- (iv) Ethane (C_2H_6) will be formed. 1
- $H_2C=CH_2 + H_2 \xrightarrow{Ni} CH_3-CH_3$ 1
- Ethene Ethane

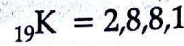
OR



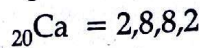
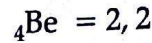
It is exothermic reaction because a large amount of heat is released.

Example : Decomposition of vegetable matter into compost. 1 + 1 + 1

7. (i) The elements which have one electron in the outermost shell are



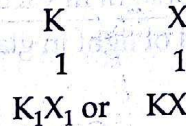
- (ii) Two element of the same group are Beryllium (Be) and Calcium (Ca)



Formula of element K and element X :

Both element K and X have valency are

So,

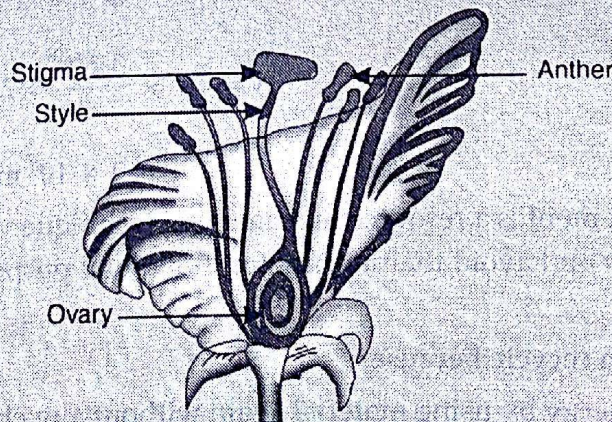


1 + 1 + 1

It is an electrovalent compound.

8. (i) Digestion starts in the buccal cavity in the mouth. 1 + 1 + 1
- (ii) The enzyme secreted in buccal cavity is salivary amylase. 1 + 1 + 1
- (iii) Salivary amylase enzyme help in the digestion of starch. 1 + 1 + 1
9. (a) The man is suffering from Diabetes mellitus :
- (i) Hormone is insulin. 1½
- (ii) Endocrine gland secretes insulin is pancreas.
- (b) The Endocrine gland which secretes growth hormone is pituitary gland :
- (i) Deficiency of growth hormone causes dwarfism. 1½
- (ii) Excess secretion of growth hormone causes gigantism. 1½

10.



4 correct labelling (i) Anther (ii) Ovary (iii) Stigma (iv) Style 1

½ × 4

[CBSE Marking Scheme, 2015]

OR

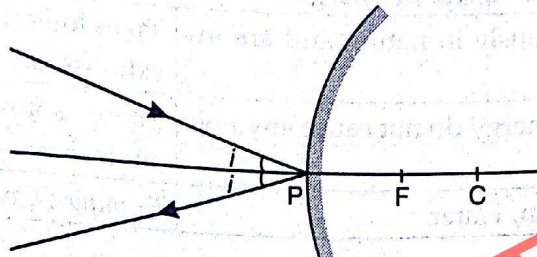
The important post-fertilisation changes in flower are :

- (i) Sepals, petals, stigma, style and stamen degenerate.

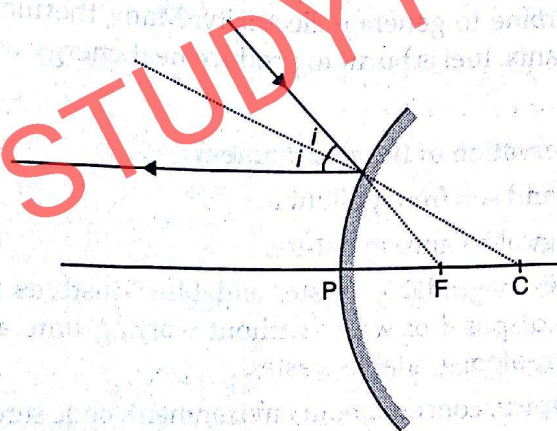
- (ii) The fertilised egg develops into embryo.
- (iii) The ovary ripens into fruit.
- (iv) The ovules ripens into seeds.
- (v) The integument of ovule changes into seed coat and funicle changes into stalk of the seed.

$\frac{1}{2} \times 6 = 3$

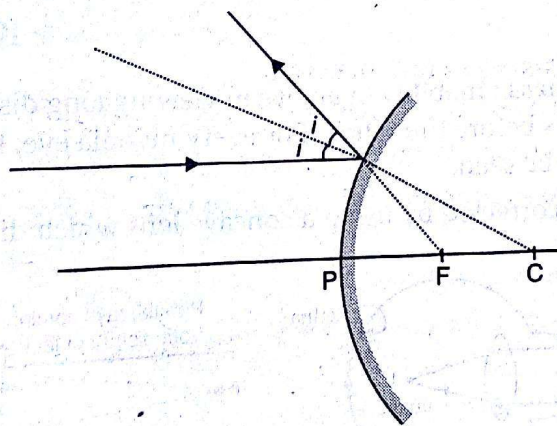
11. (i)



(ii)



(iii)



1 + 1 + 1

12. In series circuit same current flows through all the resistors current through 15Ω resistor.

$$I = \frac{V}{R} = \frac{3V}{15\Omega} = \frac{1}{5}$$

$$= 0.2 \text{ A}$$

∴ Current in the circuit = 0.2 A

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

$$V = IR$$

$$= 0.2 \text{ A} \times 10 \Omega$$

$$= 2V$$

∴ Potential drop across 10Ω resistor is

$1\frac{1}{2} + 1\frac{1}{2}$

13. An electromagnet is a solenoid coil that attains magnetism due to flow of current. It works, on the principle of magnetic effect of current.

- (i) By suspending magnetised bar and identify its north and south poles.
- (ii) By finding the polarity of electromagnet using the property like poles repel. 1 + 1 + 1

14. Difference between renewable and non-renewable sources of energy :

S.No.	Renewable Source of Energy	Non-Renewable Source of Energy
(i)	Produced continuously in nature and are in-exhaustible.	Takes long time for production and may get exhausted.
(ii)	These sources of energy do not cause any pollution.	These sources are the major cause of environmental pollution.
(iii)	Example : Wind, Sun, Water.	Example : Coal, Petroleum.

BESTSTUDYTUTORIAL 1 + 1 + 1

OR

Large amount of fossil fuels are burnt everyday in power stations to heat up water to produce steam which further runs the turbine to generate electricity. Many thermal power plants are set up near coal or oil field. In these plants, fuel is burnt to produce heat energy which is converted into electrical energy. 3

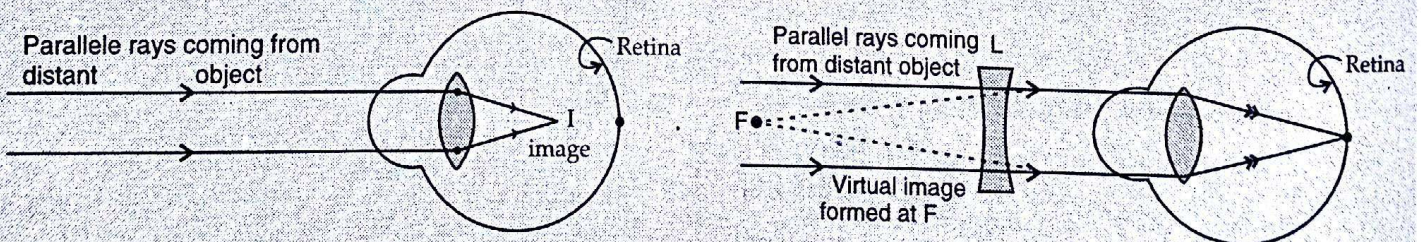
15. Two reasons for the conservation of the environment :

- (i) (a) To save air, water and soil from pollution.
- (b) To maintain ecological balance in nature. 2 × ½ = 1
- (ii) Green dustbins for biodegradable waste, and blue dustbins for non-biodegradable waste are meant for proper disposal of waste without wasting time and energy in segregating the biodegradable and non-biodegradable wastes. 2 × ½ = 1
- (iii) Values : cooperative spirit, concern about environment, civic sense or any other. (Any two) 2 × ½ = 1

[CBSE Marking Scheme, 2016]

16. Myopia or short-sightedness : Inability of an eye in viewing long distance objects is called myopia. The image in this case falls before the retina. For every myopia eye, there exists a far point beyond which clear image cannot be seen.

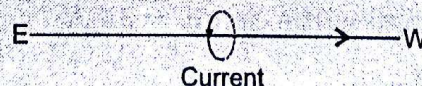
The Short-sightedness is corrected by using a concave lens which diverges and shifts the image to the retina.



1 + 2 + 2

[CBSE Marking Scheme, 2015]

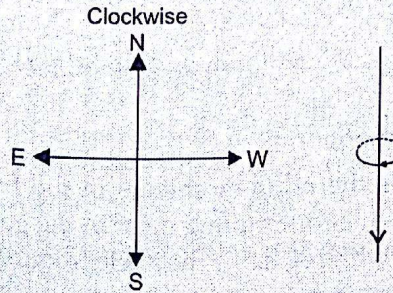
17. Direction of current will be from East to West direction.



Maxwell's right hand thumb rule



Statement : Imagine that you are holding the current carrying wire in your right hand so that your thumb points in the direction of current, then the direction of your fingers encircle the wire will give the direction of magnetic field.

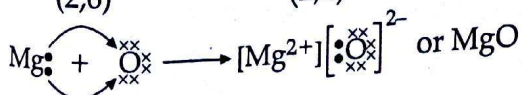
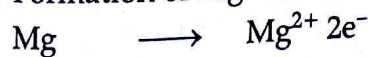


5

[CBSE Marking Scheme, 2016]

OR

- (i) Fuse being a wire of low melting point, it melts when a large current flows due to short-circuiting or overloading. 1
Earthing of appliance: Earth wire is connected to a plate deep in the earth. If there is leakage of current, it goes to earth. 1
- (ii) Electron will move in a direction perpendicular to the plane of paper and into it. ½
Flemings Left Hand Rule : Stretch the first three fingers of the left hand mutually perpendicular to each other such that the forefinger points the direction of magnetic field, the middle finger points the direction of current, then the thumb will indicate the direction of force experienced by the conductor. It is applied to the direction of the current and field perpendicular to each other. 1½
- (iii) Neutron will continue to move in same direction because no force will act on it since it carries no charge. 1
18. (i) Pass the vapours of the given samples of saturated and unsaturated hydrocarbons into bromine water taken in two separate test-tubes.
The one which discharges the colour of bromine water is that of unsaturated hydrocarbon and the other represents saturated hydrocarbon. 2
- (ii) On burning ethane in air, the products obtained are carbon dioxide and water, along with heat and light. 1
$$2\text{C}_2\text{H}_6(\text{g}) + 7\text{O}_2(\text{g}) \longrightarrow 4\text{CO}_2(\text{g}) + 6\text{H}_2\text{O}(\text{l}) + \text{Heat} + \text{light}$$
 1
- (iii) It is considered a substitution reaction because the hydrogen atoms of methane (CH_4) are replaced by chlorine atoms one by one. 1
19. (i) (a) Ionic compounds have high melting and boiling points. It is because of strong force of attraction between oppositely charged ions, therefore high energy is required to break the metallic bonds between ions.
- (b) Ionic compounds are soluble in water because they form ions in aqueous solutions.
- (c) Ionic compounds conduct electricity in molten state and in aqueous solution because ions carry current. The movement of ions takes place towards oppositely charged electrode in electric field.

(ii) Formation of MgO :

MgO has Mg^{2+} and O^{2-} ions.

3 + 2

BESTSTUDYTUTORIAL

20. (i) It is an evolutionary process by which new species arise.

Factors :

(a) Geographical isolation

(b) Genetic drift

(c) Natural selection

2

(ii) (Any two with explanation)

(a) **Genetic Drift** : It is the random change in the frequency of alleles in a population over successive generations due to sampling error in the gametes. Each new generation differs from its parental generation with regard to the allele frequencies simply because of random variation in the distribution of gametes.

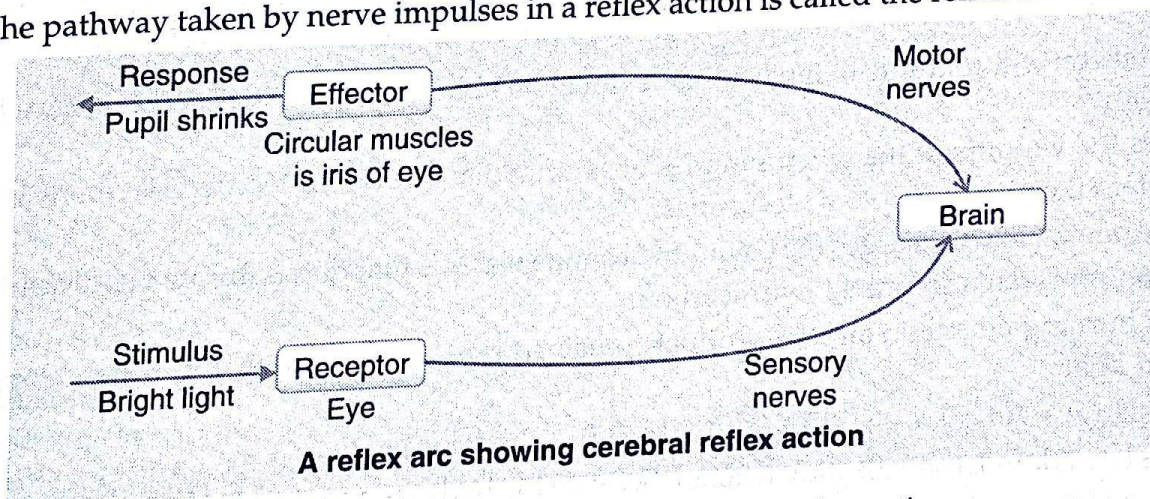
This process is more rapid in smaller population, hence genetic drift can cause loss of genetic diversity if there are no counteracting factors.

(b) **Natural Selection** : It is the process, according to Darwin, which brings about the evolution of new species of animals and plants. Darwin found that variations existed between individuals of the population and concluded that disease, competition and other forces acting on the population eliminated those individuals which are less well adapted to their environment. The surviving population would pass the hereditary advantageous characteristic to their offsprings.

1½ + 1½

[CBSE Marking Scheme, 2015]

21. (i) The pathway taken by nerve impulses in a reflex action is called the reflex arc :



(ii) **Auxin** : It promotes elongation and division of cell and root formation.

Gibberellins : They help in growth of stem.

Cytokinins : They promote cell division and delay leaf ageing.

Abscisic acid : It prevents wilting of leaves.

3 + 2

OR

The chemical compounds released by stimulated cells for control and coordination in plants are called plant hormones or phytohormones.

Four different types of hormones are :

(i) Auxin - Controls growth

(ii) Gibberellins - Growth of stem

(iii) Cytokinin - Promotes cell division

(iv) Abscisic acid - Inhibits growth, wilting of leaves

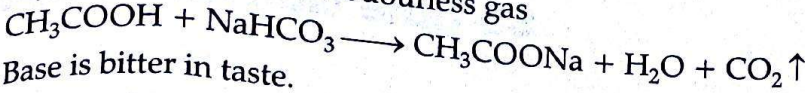
BESTSTUDYTUTORIAL

Section 'B'

BESTSTUDYTUTORIAL

22. Brisk effervescence.

Evolution of colourless/ odourless gas.



23. Base is bitter in taste.

Base produces hydrogen gas when reacted with metals.

½ + ½ + 1

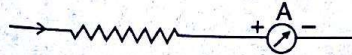
24. (i) An organism having elongated and constricted nucleus.
(ii) An organism having two nuclei with constriction in between.

1 + 1

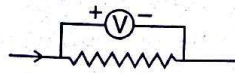
25. Ammeter — in series

1 + 1

Voltmeter — in parallel



1 + 1



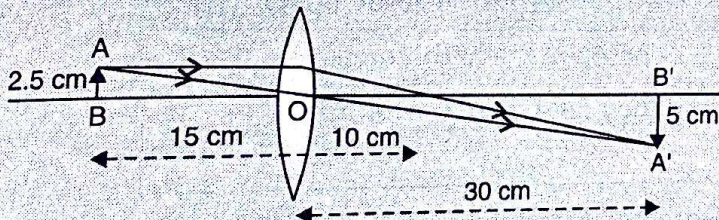
26. (i) Leaf peels are mounted in glycerine to prevent it from drying.
(ii) Safranin is used to stain the leaf peels.

1 + 1

OR

- (i) Destarch leaf of the potted plant.
- (ii) Using strips of black paper, cover a portion of the leaf.
- (iii) Expose the plant to sunlight for four hours.
- (iv) Pluck the experimental leaf.
- (v) Remove the black paper strips from the leaf.
- (vi) Test the experimental leaf for presence of starch.

2



Marking of O, F and size of the image. 2
[CBSE Marking Scheme, 2016]

