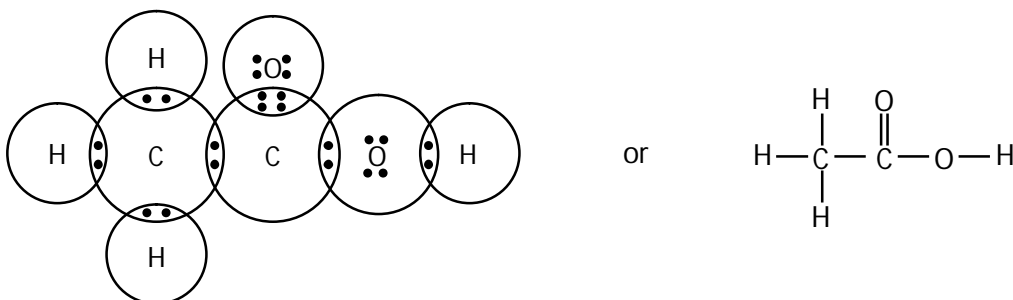


Class-10 - Science - Solution Sheet

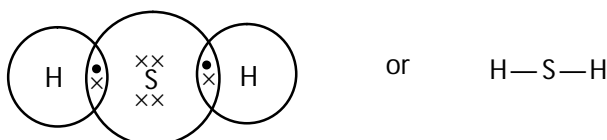
SECTION - A

1. Bryophyllum
2. The energy consumed by a device of 1 kilowatt rating in time interval of 1 hour is called 1 kilowatt-hr. It is commercial unit of energy.
3. (i) The electron dot structure of ethanoic acid (CH_3COOH) is :



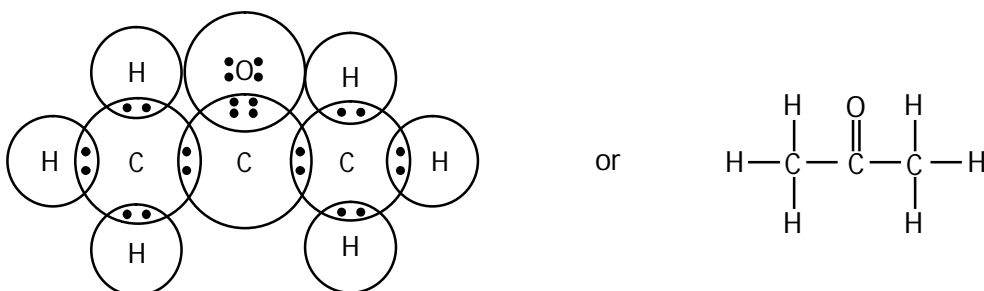
Thus, ethanoic acid contains three C—H single covalent bonds, one C—C single covalent bond, one C=O double bond, one C—O single bond and one O—H single bond.

- (ii) The electron dot structure of H_2S is



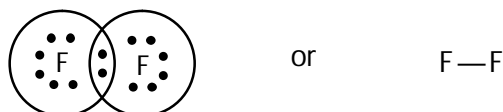
Thus, H_2S contains two S—H single covalent bonds.

- (iii) The electron dot structure of propanone is



Thus, propanone contains six C—H single covalent bonds, two C—C single covalent bonds and one C=O double bond.

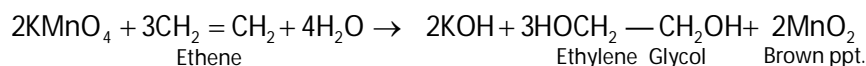
- (iv) The electron dot structure of F_2 is



Thus, F_2 has one F—F single covalent bond.

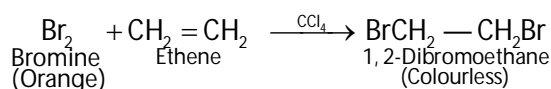
4. Every month uterus prepares itself to receive fertilized eggs. Its lining becomes thick to provide nutrition to embryo if fertilization of egg takes place. If fertilization of egg does not take place then lining is no longer needed and it gets detached and comes out through vagina along with the blood.
5. The phenomena of visibility of particles like dust etc., when it obstructs the path of light rays is called Tyndall effect. This phenomena depends on the relative size of particle & the wavelength of light.
6. Ethene being unsaturated undergoes addition reactions. On the basis of addition reactions, the following two tests can be used to distinguish ethene from ethane.

Baeyer's test or KMnO_4 test : When ethene is passed through cold aqueous alkaline KMnO_4 solution, the purple colour of KMnO_4 is discharged and a brown precipitate of manganese dioxide (MnO_2) is formed.



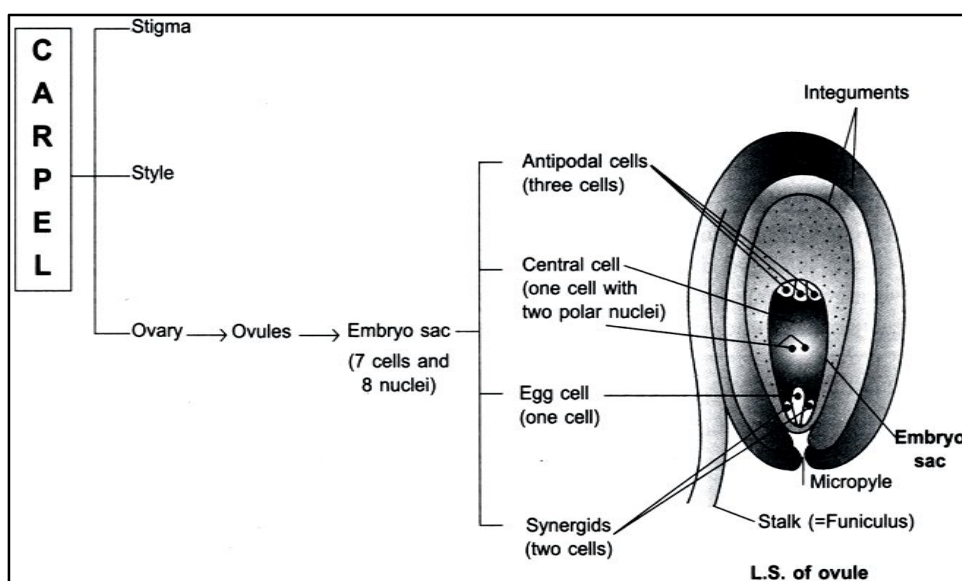
This test is called **Baeyer's test for unsaturation**. Since during this reaction, two hydroxyl groups are added to the double bond, this reaction is also **hydroxylation**.

Bromine in carbon tetrachloride or $\text{Br}_2\text{—CCl}_4$ test: When ethane is passed through a solution of Br_2 in CCl_4 , the orange colour of Br_2 is discharged.



During this reaction, addition of Br_2 occurs across the double bond to form colourless 1, 2-dibromoethane.

7. (i) Compounds of carbon and hydrogen only are called hydrocarbons. For example, methane (CH_4), ethane, etc.
 (ii) Saturated hydrocarbons contains only C—C single bond while unsaturated hydrocarbon contain atleast one C=C or $\text{C}\equiv\text{C}$ for example ethane and ethene or ethyne.
 (iii) That portion of the organic molecule which largely determines its chemical properties is called the functional group. For example aldehyde group, keto group, etc.
8. (1) Covalent compounds have low melting and boiling points because intermolecular forces are small.
 (2) Generally these are poor conductors of electricity because the electrons are share between atoms and no charged particles are formed.
 (3) Generally covalent compounds dissolve in organic solvents i.e., ether, benzene etc. and not in water. It is because these compounds are non-polar and dissolve in non-polar solvents as 'like-dissolves like'.
9. .



10. (i) **Testes** are the glands present only in males and secretes male sex hormones.
 (ii) **Adrenal** glands are located on the top of two kidneys.
 (iii) **Pancreas** is a digestive gland which secretes pancreatic juice for digestion and also secrete insulin hormone.

11. (i) $\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$
 $\Rightarrow \frac{1}{-15} + \frac{1}{v} = \frac{1}{-10}$

$$\Rightarrow \frac{1}{v} = \frac{1}{15} - \frac{1}{10} \quad \Rightarrow \frac{1}{v} = \frac{10-15}{150} = \frac{-5}{150}$$

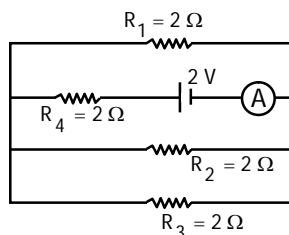
$$\Rightarrow \frac{1}{v} = \frac{-1}{30} \quad \Rightarrow \boxed{v = -30 \text{ cm}} \quad \text{is the position of image}$$

(ii) $m = \frac{-v}{u} = -\left(\frac{-30}{-15}\right) = -2 = \frac{h'}{h}$
 $\Rightarrow \boxed{h' = -2h}$
 $\Rightarrow h' = -2 \times 1 \text{ cm} \quad \Rightarrow \boxed{h' = -2 \text{ cm}}$

\therefore The image is inverted and enlarged.

12. Refer to notes.

13. Those materials which allow the flow of electric current through itself when a potential difference is applied across it are called conductors and those which do not allow the flow of electric current are called insulators. In solid conductors like metals it is the flow of free electrons that constitute the electric current. And in case of liquid conductors like electrolytic solution flow of ions constitute the current.
14. (i) Sexual reproduction gives rise to more variations than asexual reproduction because in asexual reproduction only a single parent is involved which gives rise to offsprings which are genetically identical to their parents. However, in sexual reproduction fusion of gametes from male and female parents combines the characters from both of them. This results in more viable variations.
- (ii) In sexual reproduction, there is an opportunity for new combination of characters as offsprings are formed as a result of fusion of gametes produced by two different parent organisms. Hence, variation takes place which is essential for evolution and origin of new species.
- (iii) All variations in a species do not have equal chances of survival. Some of the variations may be so drastic that a new DNA copy cannot work with the cellular apparatus it inhibit.
15. Ans.



Here, R_1, R_2 & R_3 are in parallel with each other.

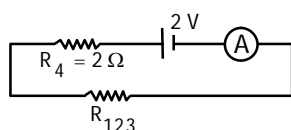
$$\frac{1}{R_{123}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$\Rightarrow \frac{1}{R_{123}} = \frac{3}{2} \quad \Rightarrow \quad R_{123} = \frac{2}{3} \Omega$$

Now, R_{123} & R_4 are in series with each other

$$R_{eq} = R_{123} + R_4$$

$$= \left(\frac{2}{3} + 2 \right) \Omega$$



$$R_{eq} = \frac{8}{3} \Omega$$

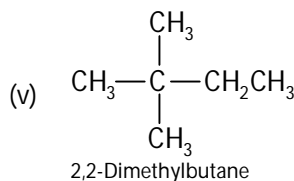
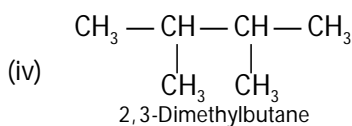
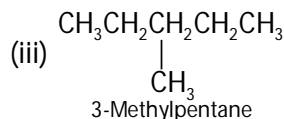
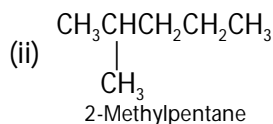
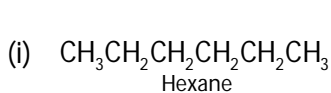
If 'i' is the current drawn from the battery of 2V the,

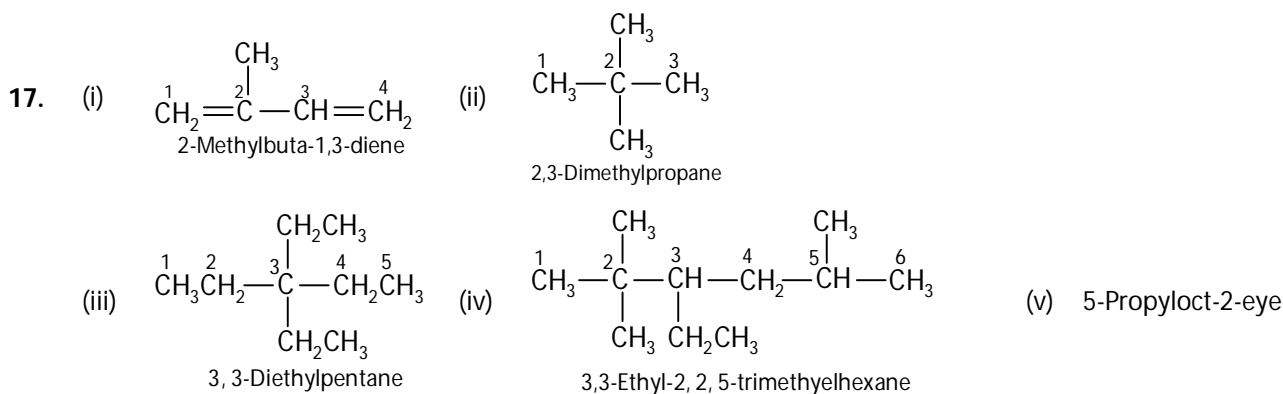
$$2 = i R_{eq}$$

$$\Rightarrow i = \frac{2}{8/3} \quad \Rightarrow \quad i = \frac{6}{8} \text{ Amp.}$$

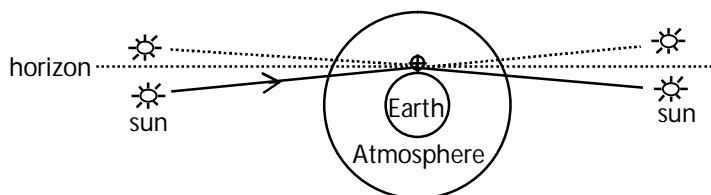
$$\Rightarrow \boxed{i = \frac{3}{4} \text{ Ampere}} \text{ is the reading of (ideal) ammeter.}$$

16. Hexane has the following five isomers :

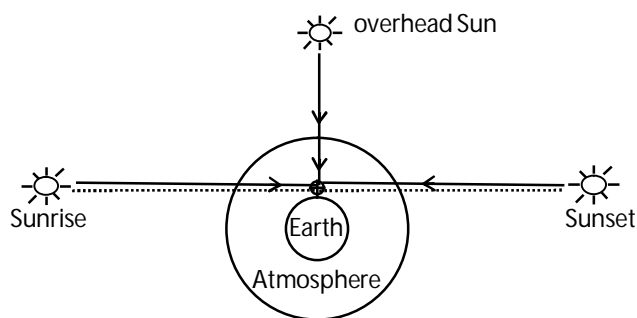




18. (i) **Implantation** : The attachment of young embryo in the wall of uterus is called implantation.
(ii) **Gestation period**: The development of the child inside the mother's body takes approximately nine months in human female. The period from the development of the zygote till the birth of the child is known as gestation period.
(iii) **Parturition**: The process of giving birth to the baby after completion of gestation period is called parturition.
(iv) **Synapse** : The space or junction between axon of one neuron and dendrites of another is called synapse.
(v) **Reflex Action**: Reflex action is a rapid automatic response of the body to a stimulus without involving the brain.
19. (i) Emulsification of fat will not take place.
(ii) Double circulation of blood in human beings prevents the mixing of oxygenated and deoxygenated blood. This allows a highly efficient supply of oxygen to the body and provides constant energy to organisms to maintain their body temperature.
(iii) Pepsin → It digests protein.
Salivary amylase → It converts starch into sugar.
(iv) Yeast cell → Ethyl alcohol
Human muscles → Lactic acid
20. (i) Phenomena of early sunrise and delayed sunset take place due to atmospheric refraction. When the sun lies below the horizon, light rays undergoes refraction (bending) while reaching the atmosphere and reach to the observer on the earth's surface, these refracted rays appears to be coming from the image of sun formed above the horizon. Because of this the observer witnesses the early sunrise & delayed sunset.



- (ii) During sunrise and sunset sky appears reddish because the sun rays travel larger distance in the atmosphere to reach the observer. So the least scattered light red reaches to the observer and the sky appears reddish.



During mid day sunrays travel small distance in the atmosphere to reach the observer and

violet, indigo and blue undergoes maximum scattering due to atmospheric particles. But our eyes are most sensitive to blue therefore clear sky appears blue to us.

