

Question 1:

List conditions under which combustion can take place.

Answer:

Combustion is a process of reaction of a substance with oxygen. There are certain conditions required for combustion to take place. They are:

- (i) Presence of a fuel
- (ii) Air (or oxygen)
- (iii) Ignition temperature (minimum temperature at which a substance catches fire)

Question 2:

Fill in the blanks:

- (a) Burning of wood and coal causes _____ of air.
- (b) A liquid fuel used in homes is _____.
- (c) Fuel must be heated to its _____ before it starts burning.
- (d) Fire produced by oil cannot be controlled by _____.

Answer:

- (a) Burning of wood and coal causes pollution of air.
- (b) A liquid fuel used in homes is liquefied petroleum gas (LPG).
- (c) Fuel must be heated to its ignition temperature before it starts burning.
- (d) Fire produced by oil cannot be controlled by water.

Question 3:

Explain how the use of CNG in automobiles has reduced pollution in our cities.

Answer:

Combustion of fuels like petroleum causes formation of un-burnt carbon particles along with carbon monoxide gas. These harmful pollutants enter the air and cause respiratory diseases. Compressed Natural Gas (CNG) produces these harmful products in very less quantity. It is a comparatively cleaner fuel. Therefore, the use of CNG has reduced pollution in our cities.

Question 4:

Compare LPG and wood as fuels.

Answer:

Wood has been a traditional fuel for both domestic and industrial use. However, it produces a lot of smoke that can cause respiratory problems. Also, wood is obtained from trees. Thus, using wood as a fuel causes deforestation. Therefore, slowly wood is replaced by LPG, which is a liquefied form of petroleum gas. It does not give out smoke and other pollutants and is a cleaner fuel. Again, fuel efficiency of LPG is more than that of wood. The calorific value of LPG is 55000 kJ / kg, while that of wood is between 17000 to 22000 kJ / kg. Hence, LPG is favoured over wood.

Question 5:

Give reasons.

- (a) Water is not used to control fires involving electrical equipment.
- (b) LPG is a better domestic fuel than wood.
- (c) Paper by itself catches fire easily whereas a piece of paper wrapped around an aluminium pipe does not.

Answer:

- (a) Water is a good conductor of electricity. If it is used for controlling a fire involving electrical equipments, then the person dousing the fire might get an electric shock. Also, water can damage electrical equipments.
- (b) LPG is a better domestic fuel as it does not produce smoke and un-burnt carbon particles, which cause respiratory problems.
- (c) A piece of paper wrapped around aluminium pipe does not catch fire easily. This is because aluminium, being a metal, is a good conductor of heat. Therefore, heat is transferred from the paper to the metal and the paper does not attain its ignition temperature.

Question 6:

Make a labelled diagram of a candle flame.

Answer:



Question 7:

Name the unit in which the calorific value of a fuel is expressed.

Answer:

The calorific value of a fuel is expressed in kilojoules per kilogram (kJ/kg).

Question 8:

Explain how CO_2 is able to control fires.

Answer:

CO_2 is a non-combustible gas and extinguishes fire in two ways:

- (i) Since it is heavier than oxygen, it covers the fire like a blanket and cuts off the contact between oxygen and fuel.
- (ii) In cylinders, CO_2 is kept in the liquid form. When released, it expands enormously and cools down. This brings down the temperature of the fuel, which helps in controlling the fire.

Question 9:

It is difficult to burn a heap of green leaves but dry leaves catch fire easily. Explain.

Answer:

Green leaves have a lot of moisture in them. This moisture does not allow them to catch fire easily. However, dry leaves have no moisture in them. Therefore, they catch fire easily.

Question 10:

Which zone of a flame does a goldsmith use for melting gold and silver and why?

Answer:

Goldsmiths use the outermost part/zone of the flame to melt gold and silver. This is because the outermost zone of the flame undergoes complete combustion and is the hottest part of the flame.

Question 11:

In an experiment 4.5 kg of a fuel was completely burnt. The heat produced was measured to be 180,000 kJ. Calculate the calorific value of the fuel.

Answer:

The calorific value of fuel is the amount of heat produced by the complete combustion of 1 kg of fuel.

Now,

Heat produced by 4.5 kg of fuel = 180000 kJ

Therefore, heat produced by $1 \text{ kg of fuel} = \frac{180000}{4.5} \times 1$ kJ/kg
= 40,000 kJ/kg

Hence, the calorific value of the fuel is 40,000 kJ/kg.

Question 12:

Can the process of rusting be called combustion? Discuss.

Answer:

Combustion is a chemical process in which a substance reacts with oxygen and gives out energy during the process in the form of either heat or light or both. Rusting of iron is an exothermic process as heat is released during rusting. Hence, it is a kind of slow combustion.

Question 13:

Abida and Ramesh were doing an experiment in which water was to be heated in a beaker. Abida kept the beaker near the wick in the yellow part of the candle flame. Ramesh kept the beaker in the outermost part of the flame. Whose water will get heated in a shorter time?

Answer:

The water in the Ramesh's beaker will heat up in a shorter time. This is because the outermost zone of a flame is the hottest zone, while the yellow zone (in which Abida had kept the beaker) is less hot.

"FOOD PRODUCTION AND MANAGEMENT"

Lesson no: 06

Text Book Questions:

I. Name the following:

1) Five requirements essential for obtaining good crop production are:

- i) Right kind of soil
- ii) Good quality of seeds.
- iii) Irrigation
- iv) Protection from weeds and pests
- v) Manuring.

2) Two types of fertilizers are:

- i) NPK fertilizers
- ii) Urea.

3) Chemicals used to protect crops from insects, pests and weeds are:

- i) Insecticides - Malathion, Dimecron.
- ii) Polythion (Pesticides).
- iii) Weedicides - 2, 4-D, Simazine.

4) Some animal products are: Eggs, Meat, Silk, Milk, Honey etc

5) Members of a colony of bees are:

- i) Workers (Sterile female)
- ii) Drones (Fertile males)
- iii) Queens (Fertile female)

II. Fill in the blanks:

1. Trowel

2. Plough

3. June and July

4. Paddy and Vegetables

5. March or April.

6. Transplanting

7. Jewellery.

8. 17%, 78%

9. coop or pen

10. buffaloes.

III. One Word Answer

1. Ploughing
2. Ploughs
3. clod crushers
4. Seed drill
5. seed bowl
6. Broody hen.
7. worker, Drone, Queen.
8. straw
9. Grains, oil cakes, green food and lime stone
10. Queen bee.

IV. Give reasons.

1. These are the constituents of the balanced diet which is necessary for proper well being of human body.
2. Loosened soil is better ventilated and suitable for the growth of micro-organisms living in it. It also allows roots to grow deeper and freely into the soil.
3. Because if they are sown too deep, they will not be able to germinate and if they are sown at a shallow depth, then they will be eaten away by birds and animals.
4. Because often they have a coating of pesticides which are harmful if consumed.
5. Because Moisture and humidity promotes the growth of fungi and moulds on grains. Some of these microorganisms are harmful.

V. Answer the following questions.

1. The requirements of farming which would lead to high yields of crops are:
 - i) Proper type of soil
 - ii) Use of Manures
 - iii) Irrigation
 - iv) Better Varieties of Seeds

v) Agricultural tools

vi) Chemicals to prevent diseases of the plant crop.
like Use of pesticides, Insecticides and weedicides.

Q2 Tilling or Ploughing is the process of loosening and turning the soil. For ploughing various types of ploughs are used. Plough is used for tilling of soil, adding fertilizers to the crop, removing of weeds, Scrapping of soil, etc. It is made of wood and drawn by a pair of bulls. It contains a strong triangular iron strip called ploughshare. The main part of the plough is a long log of wood which is called Plough shaft. There is a handle on one end. The other end is attached to a beam which is hung on the neck of bulls. One pair of bulls and a man can easily operate the plough.

Q3 Sowing is a process of putting seeds in the soil. There are two methods of Sowing of seeds.

1) The first method is by scattering the seeds in the field by hand. This is known as Broadcasting. In developed countries seeds are not sown by hand. Even when it is broadcast, it is sown by a machine called broadcaster which is made up of a long hopper (to hold the seeds) and a series of spinning disc which scatter the seeds as they fall through the bottom of the hopper at a controlled rate.

2) The second method of sowing is by using seed drills. This method is widely used in India. The simplest seed drill consists of a vertical tube with a seed bowl. This arrangement is tied to the

plough and the farmer drops the seeds into the bowl. As plough is often adapted to line sowing. There are number of modifications in the seed drill. The principle in all is the same.

Q4 Manures are the Organic materials which supply the nutrients that a plant needs in small amount. Manures add organic matter to the soil. The important types of manures are farmyard manure (FYM), green manure, compost.

i) Farmyard manure (FYM): It is the most valuable organic matter commonly applied to the soil. This usually consists of remnants of straw, leaves and other materials like the excreta of cattle.

ii) Green manuring: The practice of turning or ploughing of green plants into soil for the purpose of improving physical structure as well as soil fertility is called green manuring. Leguminous crops like cluster beans, cowpea, horsegram etc are grown as green manure crops.

ii) Compost: It consists of all the cattle shed wastes and all the available refuse. All these are properly mixed together and can be used as manure after rotting.

Q5 Fertilizers are inorganic materials that are used mainly to increase the essential elements in the soil e.g, nitrogen, phosphorus, potassium fertilizers which are needed by the plants. e.g. NPK, urea, superphosphate etc.

Importance of fertilizers:

- They are used to increase the essential elements in soil and make the soil rich in nitrogen, phosphorus and potassium.

Q6: Broadcasting: Refer to Q3 (i).

Transplanting: It is a process of taking out young plants from nursery beds and transfer them to fields or seedlings with required spacing, water and minerals for adequate growth.

Q7 Manure

- 1) These are organic substances prepared from the decomposition of plant and animal wastes.
- 2) They contain mixture of various nutrients recycled from biomass wastes.

3) They are not in a concentrated form.

4) They are not easy to store and transport.

5) They are never harmful to soil

Fertilizers.

1) These are mixtures of chemical compounds rich in nitrogen, phosphorus, potassium etc.

2) chemical fertilizers are nutrient specific i.e. nitrogenous, phosphate etc.

3) They are in a concentrated form.

4) They are easy to store and transport.

5) They are harmful if used in excess.

Q8 Weeds are unwanted plants which grow in the field along with crop plants. They compete with the crop plants for nutrients, sunlight and water. Thus, they reduce the crop yield.

Methods of removal of weeds are:

- i) Tilling: The process of loosening and turning of the soil is called tilling or ploughing. This is done by using plough. Tilling helps in uprooting and killing of weeds.
- ii) Manual Removal: This method removes the weeds by physical methods by uprooting or cutting them close to the ground. This is done with the help of khurpa or Harrow.
- iii) Chemical Method: In this method, weeds are controlled by using some chemicals called weedicides like 2, 4-D. The weedicides are sprayed in the fields with a sprayer.

Q9 Insecticides are the chemicals which selectively kill the pests or harmful insects as well as their eggs and larvae but do not affect the plants. e.g. malathion, dimethion, polythion.

Q10. Insecticides kill the insects like locusts, grasshoppers as well as their larvae but the plants are not affected by them.

Q11 The two main seasons in India for the cultivation of crops are:

- i) Rabi season (Nov - April)
- ii) Kharif season (June - October)

Q12 Some harvest festivals of India are:
Pongal, Baisakhi, Holi, Diwali, Nabanya and Bihu.

Q13 Four factors responsible for improvement of a crop are:

- i) Plant breeding
- ii) Soil Improvement
- iii) Protection from pests and weeds.
- iv) Storage.

Q14 Harvesting is a process of cutting ~~the~~ and collecting the matured crop from the fields. This may be done either by hand or with a sickle or with machines known as combines or harvesters.

Q15 If the same crop is grown continuously, soil may be deprived of certain nutrient elements. In order to prevent this depreciation and in order to maintain the fertility of the soil, two crops are grown alternately, e.g., maize and wheat are grown alternately with groundnut. This is called crop rotation.

Q16 The practice of cultivating two crops simultaneously is done to economise the time and energy. This is called mixed cropping. This method saves the time and labour. It also helps the products and waste material of one crop to be utilized by another crop if chosen properly. e.g., The crop of groundnut is grown in the fields along with cotton.

Q17 Some fields are allowed to rest and regenerate for at least a season to support a crop. This is called field fallow.

The growth of humus picks up which in turn promotes the growth of soil micro-organisms. During such undisturbed period, it leads to rich replenishment of nutrients.

Q18 Fish form the major source of animal protein. The oil obtained from the fish can be used for various purposes.

Q19 Honey contains 17% water and 78% sugar with minerals and enzymes which help in the digestion of food.

Q20) Domesticated animals are used for our own work and food.

ii) These animals play a significant role in the welfare of mankind.

iii) Hens are used for eggs. Cows and buffaloes are used for milk.

iv) Domesticated dogs are used for our home protection.

Question 1:

Which of the following cannot be charged easily by friction?

- (a) A plastic scale
- (b) A copper rod
- (c) An inflated balloon
- (d) A woollen cloth

Answer:

- (b) A copper rod

Only non-conducting materials can be easily charged by friction. Copper is a highly conducting materials. Therefore, a copper rod cannot be charged easily by friction.

Question 2:

When a glass rod is rubbed with a piece of silk cloth the rod

- (a) and the cloth both acquire positive charge.
- (b) becomes positively charged while the cloth has a negative charge.
- (c) and the cloth both acquire negative charge.
- (d) becomes negatively charged while the cloth has a positive charge.

Answer:

- (b) The rod becomes positively charged, while the cloth has a negative charge.

When an object is charged by rubbing it against another object, the two objects get oppositely charged. By convention, it is considered that the charged acquired by the glass rod is positive and charged acquired by the cloth is negative. Therefore, the rod becomes positively charged and the cloth becomes negatively charged.

Question 3:

Write T against true and F against false in the following statements.

- (a) Like charges attract each other. (T / F)
- (b) A charged glass rod attracts a charged plastic straw. (T / F)
- (c) Lightning conductor cannot protect a building from lightning. (T/F)
- (d) Earthquakes can be predicted in advance. (T / F)

Answer:

- (a) False

Like charges repel each other. It is the unlike charges that attract each other.

(b) True

A charged glass rod has positive charges on its surface while a charged plastic straw has negative charges on its surface. Since unlike charges attract each other, a charged glass rod attracts a charged plastic straw.

(c) False

During a lightning, the lightning conductor conducts all the atmospheric charges to the Earth directly, leaving the building safe. Hence, lightning conductors protect a building from lightning.

(d) False

Although the causes of earthquakes is known, but no instrument could be invented to detect it till now. Hence, earthquakes cannot be predicted in advance.

Question 4:

Sometimes, a crackling sound is heard while taking off a sweater during winters. Explain.

Answer:

When a sweater is taken off, the woollen sweater gets charged because of the friction between the sweater and the body. Hence, one can hear a crackling sound during the given process.

Question 5:

Explain why a charged body loses its charge if we touch it with our hand.

Answer:

When we touch a charged object, our body conducts its charges to the earth. That is why a charged body loses its charge, if we touch it with our hand. This phenomenon is known as electric discharge.

Question 6:

Name the scale on which the destructive energy of an earthquake is measured. An earthquake measures 3 on this scale. Would it be recorded by a seismograph? Is it likely to cause much damage?

Answer:

The destructive energy of an earthquake is measured by the Richter scale. This scale has the readings from 1 to 10.

The reading of magnitude 3 on the Richter scale would be recorded by a seismograph.

If the Richter scale gives a reading of magnitude 3, then the earthquake is not likely to cause much damage. Generally, earthquake of magnitudes higher than 5 is considered destructive in nature.

Question 7:

Suggest three measures to protect ourselves from lightning.

Answer:

Protective measures against lightning are as follows:

- (i) Stay in a completely closed place. If you are moving in a car, then remain there until the lightning is over. Close the windows of the car immediately.
- (ii) Do not touch any electrical wires, telephone cables, metal pipes, etc.
- (iii) Do not bath in running water. This may cause an electric shock.

Question 8:

Explain why a charged balloon is repelled by another charged balloon whereas an uncharged balloon is attracted by another charged balloon?

Answer:

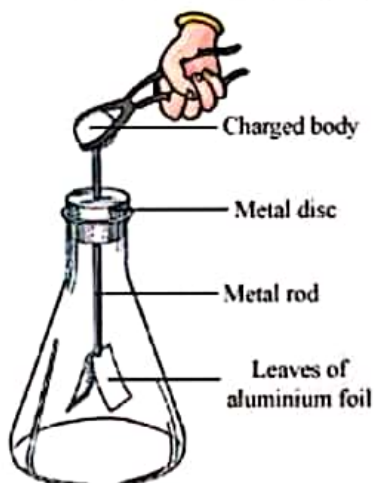
The nature of charges present on the surface of charged balloons are similar. Since like charges repel each other, two charged balloons repel each other. When a charged body is brought near an uncharged body, the uncharged body acquires charges on its surface caused by the induction of charges. The charges are of opposite nature in relation to the charged body. Since unlike charges attract each other, a charged body always attracts an uncharged body. Hence, an uncharged balloon is attracted by another charged balloon.

Question 9:

Describe with the help of a diagram an instrument which can be used to detect a charged body.

Answer:

An electroscope can be used to detect whether a body is charged or not. The following figure shows a simple electroscope.



It consists of a metal rod. At one end of the rod, two leaves of aluminium foil are fixed and at the other end, there is a metal disc. The leaves of aluminium foil are placed inside a conical flask and the flask is corked to isolate the leaves from air.

When the metal disc is touched with a charged body, the aluminium strips move away from each other. This happens because some of the charges of the body are transferred to the strips through the metal rod. This method of charging a body is called charging by conduction. The nature of charges on both the leaves and the charged body are the similar. Hence, both the leaves of the aluminium foil will move away from each other. If the body was not charged, then the leaves of the foil would remain as they were before. They would not repel each other.

Question 10:

List three states in India where earthquakes are more likely to strike.

Answer:

The three states in India where earthquakes are more likely to strike are Jammu and Kashmir, Gujrat, and Assam.

Question 11:

Suppose you are outside your home and an earthquake strikes. What precaution would you take to protect yourself?

Answer:

Some of the precautions are as follows:

- (i) Try to find an open field away from tall buildings, installations, tall trees, and electric wires and poles.
- (ii) If travelling in a bus or a car, then do not come out when an earthquake strikes. Ask the driver to drive in an open field.

Question 12:

The weather department has predicted that a thunderstorm is likely to occur on a certain day. Suppose you have to go out on that day. Would you carry an umbrella? Explain.

Answer:

No. We should not carry an umbrella in a thunderstorm. During thunderstorms, which are accompanied with lightning, electric discharge from the clouds can travel through the metallic rod of the umbrella. This may give an electric shock to the person who is carrying it. Hence, it is not safe to carry an umbrella during lightning.