VIII 20/4/2020

Mathematics

If two rational numbers are to be added, we should convert each of them into a rational number with same positive integer.

Case I When given numbers have same denominator

Find the sum of

(i) $\frac{7}{9} + \frac{11}{9} = \frac{7+11}{9} = \frac{18}{9} = 12$

(ii) $\frac{2}{-11} + \frac{3}{11} = \frac{-8}{11} + \frac{3}{11} = \frac{3}{11} - \frac{8}{11} = \frac{3-8}{11} = \frac{-5}{11}$

Solve self

(iii) $\frac{-2}{5} + \frac{4}{5}$ =

(iv) $\frac{-6}{11} + \frac{(-4)}{11}$ =

(v) $\frac{5}{6} + \frac{(-5)}{6}$

(vi) $\frac{-11}{8} + \frac{5}{8}$ =

(vii) $\frac{-7}{3} + \frac{1}{3}$

(viii) $\frac{-17}{15} + \frac{(-1)}{15}$

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Case 2 when Denominator of given numbers are unequal

Example:- Find the sum of

(i) $\frac{5}{6} + \frac{4}{9}$ L.C.M of 6, 9 is 18

$= \frac{5}{6} + \frac{4}{9} = \frac{(5 \times 3) + (4 \times 2)}{18}$

$= \frac{15 + 8}{18}$

$= \frac{23}{18}$

L.C.M of 6 and 9

2	6, 9
3	3 9
3	1 3
	1, 1

$2 \times 3 \times 3 = 18$

Do self.

(ii) $\frac{3}{4} + \frac{(-3)}{5}$

(iii) $\frac{5}{8} + \frac{7}{12}$

(iv) $\frac{-8}{9} + \frac{11}{6}$

(v) $\frac{-5}{16} + \frac{7}{24}$

(vi) $\frac{-7}{18} + \frac{8}{27}$

(vii) $\frac{-1}{12} + \frac{2}{15}$

(viii) $\frac{-5}{4} + 2$

(ix) $0 + \frac{2}{5}$

Rearrangement property: In this property we will use case -1 Case 2 to find the sum of rational numbers.

(i) $\frac{4}{3} + \frac{3}{5} + \frac{(-2)}{3} + \frac{(-11)}{5}$

$= \frac{4}{3} + \frac{(-2)}{3} + \frac{3}{5} + \frac{(-11)}{5}$

$= \frac{4-2}{3} + \frac{3-11}{5}$

$= \frac{2}{3} + \frac{(-8)}{5}$

$= \frac{(2\times5) + (-8\times3)}{15}$

$\frac{10 + (-24)}{15} = \frac{10-24}{15} = \frac{14}{15}$

Do self:

(ii) $\frac{-8}{3} + \frac{-11}{3} + \frac{-1}{4} + \frac{3}{4}$

(iii) $\frac{-13}{20} + \frac{11}{7} + \frac{7}{20} + \frac{-5}{7}$

(iv) $\frac{-6}{7} + \frac{-5}{6} + \frac{-15}{7} + \frac{-4}{6}$

Additive Inverse

Example: Additive inverse of $\frac{5}{7}$ is $\frac{-5}{7}$

additive inverse of $\frac{-5}{4}$ is $\frac{3}{4}$

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Do self

Find the additive inverse of

(i) $\frac{8}{3}$

(ii) $\frac{3}{7}$

(iii) $\frac{-4}{9}$

(iv) $\frac{-2}{-3}$

(5) 6

(6) $\frac{11}{12}$

(7) $\frac{-1}{3}$

(8) $\frac{-3}{21}$

English Lit

Copywork

(3) What did Ivan think about his and Masha's relatives?

Ans Ivan thought about his and Masha's relatives that they are malignantly. All those wretched would came crawling about as soon as they heard of the winning ticket.

(4) What kind of pictures came in Ivan's imagination?

Ans:- Ivan imagined how nice it would be in late autumn to go board somewhere to the South of of France, to Italy and to India.

or

(The Pictures came on his imagination, each more gracious and poetical than the last. He saw himself well-fed, serene, healthy, feltwarm and even hot.)

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What Ivan thought about St. Martin's summer?

Ivan thought that the St. Martin's summer is followed by cloudy and gloomy weather. It rains day and night. The bare trees weep, and the wind is damp and cold.

What happened in the last?

In the last when he saw Series 9, 499 number 46, not 26. Hatred and hope both disappeared at once and it began immediately to seem to Ivan Dmitrich and his wife that their rooms were dark and small and low-pitched.

c) Make sentences using the following words (Do self)

Gloomy
Wretched
Poetical
Triumphantly
Malignantly
Bewildered

b Two page writing.

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Social Study

Copy work:-

(3) Throw some light on the changing nomenclature of the sub-continent and its regions.

Ans:- The Indian sub continent, consisting of the modern countries of India, Pakistan and Bangladesh formed part of the British Indian partition (1947) and Sri Lanka also formed of the British empire in Asia until 1937

(4) Describe the various sources of Modern Indian History.

Ans There are two sources of of modern Indian history.

Primary Source:- These include original documents and literary evidences. Archaeological remains. audio cassettes, films, video-tapes of incidents and interviws of important personalities.

Secondary Source:- These include the works of great historians and scholars, articles, reviews, books and newspapers.

Answer the following questions briefly:

When did the modern age start in India?

ns:- The modern period began in India in the eighteenth century

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6 What are the primary sources of modern Indian history?

Ans:- Primary sources of history include original documents, archaeological evidence, audio cassettes, film etc. while book magazines articles review etc are secondary sources.

7 Name the secondary sources of modern Indian history

Ans:- The secondary sources include the works of great historians and scholars, articles, reviews and newspaper.

8 When did India become a republic.

Ans:- India became republic on 26 January 1950.

English Grammar

You have read the format of Diary Entry in previous study material.

Now :

1) While visiting the Jantar Mantar, you came across many children outside the monument with begging bowls in their hands. You were shocked and disgusted at this sight. Make a diary entry in about 120 words of what you saw and experienced there.

2) You are Ambika, a student of class VIII. Write your diary mentioning your future plans. Do not exceed 120 words.

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(5) You always plan to save money and not to spend extravagantly. But whenever you go to market, you waste money like water, ignoring your plan on resolution. Write you feelings in the form of a diary entry.

(हिन्दी) (कृतिका)
पाठ-1 (हिन्दी जन की बोली है)

(क) आँखी कार्य।

(ख) हिन्दी भाषा के विषय में आप क्या सोचते हैं? अपने विचार लिखिए।

उ० हिन्दी भाषा का स्थान सर्वोपरि है सर्वाधिक प्रचलित होने के नाते हिन्दी को राष्ट्रभाषा माना गया है। हिन्दी भाषा एक ऐसी डोर है जो सबको एक डोर में बाँधती है। सभी पवित्र नदियों को हिन्दी एक साथ जोड़ती है।

(ग) विश्व को एक सूत्र में पिरोये रखने में हिन्दी की क्या भूमिका है?

उ० हिन्दी को राष्ट्रभाषा माना गया है। जिसमें पूरे विश्व में भावात्मक एकता स्थापित करने की क्षमता है। हिन्दी सम्पूर्ण विश्व को एकता का पाठ पढ़ाती है।

(3) स्वयं करे। कविता (हिन्दी जन की बोली है) का सार संक्षेप में लिखो।

(4) निम्न शब्दों के दो-दो पर्यायवाची लिखो। (स्वयं करे)

सागर -
नदी -
अनुपम -
कामना -

निम्नलिखित वाक्यांशों के लिए एक शब्द लिखिए –

(क) जो सबको एक समान देखता है।
(ख) जहां दो या अधिक रास्ते, नदियाँ आदि मिलते हैं।
(ग) जिसकी उपमा न दी जा सके।
(घ) चार रंगों से युक्त।
(ङ) समुद्र के किनारे का पिकनिक स्थल।
(च) किए गए उपकार को मानने वाला।

पाठ 2 जीवन का लक्ष्य

शब्द	अर्थ
संचार	बहाव, प्रवाह, आवागमन
संगम	मेल, मिलन
केन्द्रित	केन्द्र में स्थित
लक्ष्यभेदन	लक्ष्य भेदना, निशाना लगाना
मंजिल	यात्रा का अन्तिम पड़ाव, गन्तव्य
दुष्कर	कठिन
प्रेरणा	प्रोत्साहन, बढ़ावा
स्रोत	साधन, माध्यम
दृढ़	मजबूत
आंधियों को झेलना	सहन करना
आश्रय	सहारा, आसरा
दूरदर्शी	दूर की सोचने वाला
संकल्प	इरादा

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संस्कृत — प्रथम पाठ:
(कॉपी कार्य)

शब्दार्थ:

अग्नौ	अग्नि में
अप्सु	जलों में
विश्वमिदम्	समस्त संसार
ओषधीषु	औषधियों में
तत	वहाँ
भाति	चमकता
कुतः	कहाँ से
भान्तम्	चमकता हुआ
भासा	प्रकाश से
वरुण	जल
शशाङ्क	चन्द्रमा
सहस्रकृत्व	हजारों बार
पुनः	फिर से
आदि	सबसे पहले
पुराण:	पुराण
विश्वस्य परम्	विश्व का सर्वश्रेष्ठ
वेत्ता	जानने वाला
असि	हो
त्वया	तुम्हारे द्वारा

Q.1.

Expand the following abbreviations related to banking and finance. (Learn and write)

PIN - Personal Identification Number
EMI - Equated Monthly Installments
IOU - I owe You
ATM - Automatic Teller Machine
KYC - Know your Customer

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1

SCIENCE

Food Production and Management

INTRODUCTION

Food is a constant urge in man and thus it has ever provided him endless motivation for devising more effective and reliable means of securing it. Presumably, agriculture began in the mesolithic or 'middle stone age' around 10,000 BC when man discovered that by seeding the grain which he gathered from the wild vegetation in the ground near his dwelling place, he could produce whole new plants to meet his entire requirements.

In this highly industrialised world of today, modern man's life fundamentally depends on agriculture. Agriculture is the backbone of man's existence. The three basic necessities of life—food, shelter and clothing—and many other essential things are derived mainly from the vegetable kingdom.

Modern agriculture requires systematic planning at every stage, from the preparation of soil to harvesting. It also requires major improvement in our crop plants that is achieved mainly through conventional plant-breeding methods.

CHAPTER SECTIONS

1.1 Agricultural Practices

Farming is the second oldest occupation known to mankind. Its discovery was a turning point for human race, for it means that man became a food producer. Earlier he was a food gatherer, hunting for meat and picking wild berries, just like the other animals. Some early farming took place around the great rivers such as the Nile in Egypt and the Ganges in India. Over the centuries, farming methods developed. Man cut down areas of forest to provide more land for cultivation and started to keep and breed domestic animals like cattle and sheep. Farming took the form of agriculture which is domestication of plants.

Speedy development of agriculture is vital to the progress of any country. For securing maximum crop production, the best use of the available land has to be made and the latest methods of crop husbandry have to be put into practice. In order to raise a crop successfully and profitably, a farmer has to perform a large number of steps. The various steps performed by a farmer to raise a crop successfully are called agricultural practices. These various steps used in crop production are as follows :

(1) preparation of the soil, (2) selection of seeds, (3) sowing, (4) manuring, (5) weeding, (6) irrigation, (7) crop protection, (8) harvesting, threshing and winnowing, (9) storage.

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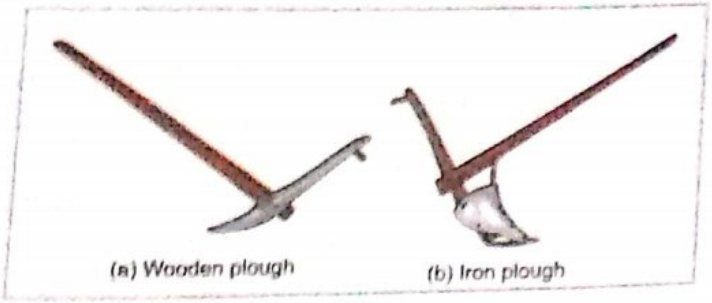
1.2 Preparation of the Soil, Selection of Seeds and Sowing

To make the soil capable to fulfil the needs of the plants is called preparation of the soil. The soil i first turned and loosened. The loose soil allows the roots to penetrate freely, deeper and breath easily. The process of loosening and turning the soil is called tilling or ploughing. This is done usin a plough made of wood or iron. The wedge point of the plough penetrates the soil, turns and break it to make it loose. Ploughing of big fields is done using tractors and smaller fields with the help o animals.



(a) Wooden plough (b) Iron plough

Fig. 1.1

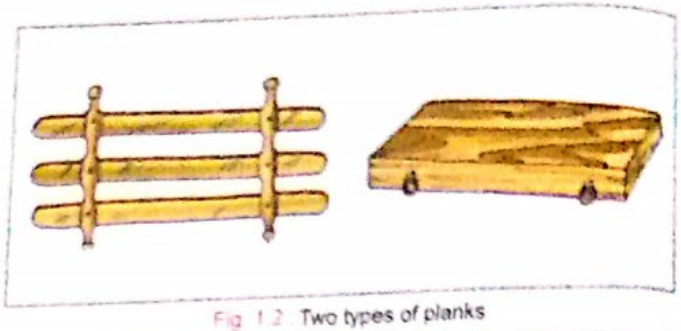


Fig. 1.2 Two types of planks

Ploughing breaks the dry soil into large mud crumbs which are further broken down by a soil plank. The plank consists of one or more flat logs and dragged over the crumbs by bullocks or a tractor. The farmer stands on the log and holds it down. The tilled soil is then levelled with the same plank so that it is not blown off by wind or drained off with water.

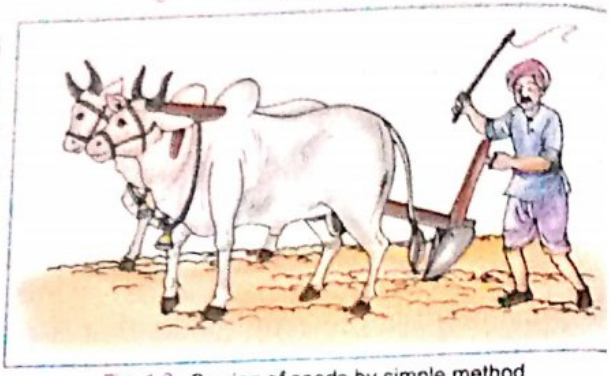


Fig. 1.3 Sowing of seeds by simple method

Selection of Seeds

Selection of seeds is an important step in agriculture. Seeds should be mature and healthy, free from pests and disease, and must belong to a specific variety of the crop which is to be grown. For this purpose, only certified seeds should be sown.

Sowing of Seeds

Broadcasting: Seeds are sown in the soil by hand or using a seed drill. This process is known as broadcasting. A seed drill is a long metal tube with fingers and a funnel at the top. The seeds are fed from the funnel. There are a number of holes in this funnel. The drill is attached to a plough and as the plough makes furrows in the soil, the seeds are sown by the drill.

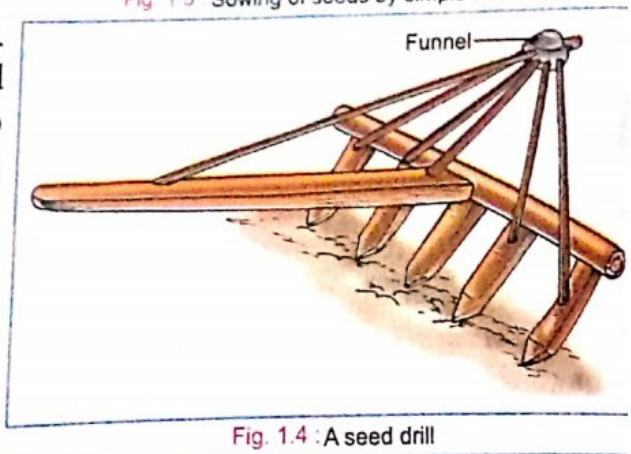


Fig. 1.4 : A seed drill

Transplantation: Seeds of some crops like rice, tomato, brinjal and cabbage are first sown in a nursery and allowed to grow into tiny plants called seedlings. The healthy and well-developed seedlings are then picked and transferred to the main field. Transfer and plantation of the seedlings from nursery into the main

Fig. 1.5 : Transplantation of seedlings of paddy in the field by workers.

crop field is called transplantation. Since only the healthier seedlings are selected to grow further, the crop yield increases.

Precautions to be taken during Sowing and Transplantation

(i) Seeds and seedlings must not be placed too close to one another, otherwise they will not receive sufficient sunlight, water and nutrients.

(ii) Seeds and seedlings should not be too far apart, because it would be a waste of field space resulting into less yield.

(iii) The seeds should be sown at a proper depth in the ground.

1.3 Manuring, Weeding and Irrigation

The top soil has a dark layer made of humus. This layer is rich in nutrients such as nitrogen, phosphorous and potassium which are essential and beneficial for plant growth. Being porous, this layer also holds water and acts as a useful storage to serve the dry months.

Every crop uses up substantial amount of nutrients present in the soil. The soil can be replenished with nutrients by adding manures and fertilizers.

Manures

Manure is made of animal wastes like dung, urine and plant wastes and is rich in nutrients—nitrogen, phosphorous and potassium. Farmers add manure as such or convert it first into compost.

Making Compost: To make compost, all animal and plant wastes are evenly spread in a pit dug in the ground. The pit is then covered with mud and leaves to protect it from air and light. Microbes ferment and decompose these wastes and convert them into simple materials which serve as excellent nutrients for the plants.

Fertilizers are mixtures of chemical compounds rich in nitrogen, phosphorous and potassium etc. These are made in factories and are easier to store and handle. The fertilizers are added to the soil in proper amount. They are directly absorbed by the plants. Excess use of fertilizers is harmful for the plants and the soil. Therefore, proper combination of manures and fertilizers is used to increase the crop yield. Fertilizers compensate the insufficient nutrients in the manure.

Weeding

Many undesirable plants grow with the crop plants. These are called weeds. They compete with the crop for water, sunlight and nutrients and reduce the crop yield. To remove the weeds is called weeding. Weeding is done by hand with the help of small spades and trowels (*khurpa*) or by using a harrow. Special chemicals called weedicides are also sprayed on the fields. These chemicals check the growth of many weeds but do not affect the main crop. Some weedicides are 2, 4–D (dichlorophenoxy acetic acid), MCPA, Metachlor, etc.

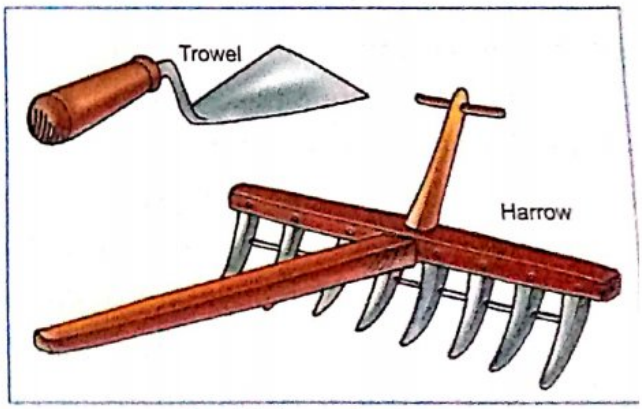


Fig. 1.6 : A trowel and a harrow

Irrigation

All processes essential for the life of a plant, take place in water solution. The water in the soil is constantly lost by evaporation and by percolation to lower depths of ground.

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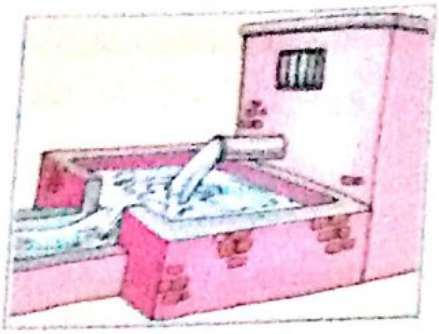
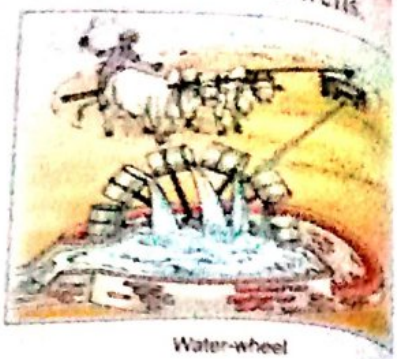
It is, therefore, necessary to periodically supply water to the plants. This process is known as irrigation. Fields are irrigated by water from canals and waterways or from wells and tube-wells.

Swinging basket



Tube-well



Water-wheel

Fig. 1.7 : Various ways of irrigating fields

Water is needed by crops at specific times. When the seeds or seedlings establish themselves in the field, water is supplied. Wheat crop requires irrigation necessarily before tilling at the time of flowering and at the time of formation of grains.

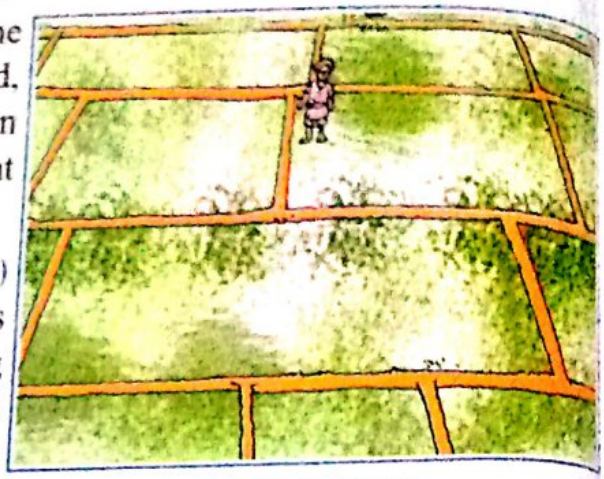


Fig. 1.8 : Field bunds

A field needs to be irrigated with just the right (enough) amount of water, neither too little nor too much. Excess of water can destroy crops. Continued water-logging increases the amount of salt in the soil and damages it permanently. Excess water can be drained off by providing a suitable outlet. Some plants like paddy (rice) need to be partially submerged in water and are irrigated by the method of individual field bunds.

1.4 Protection, Harvesting and Storage of Crops

Crop Protection

Crops need to be protected from birds and pests particularly at the time of formation of grains. This requires daily attention of the farmer. Birds can be scared away from eating the grains with the aid of a scarecrow. *Scarecrow* is a figure made to resemble a person that is dressed in old clothes and put in a field to frighten birds away. The common *pests* are insects and rodents (rats and rabbits). Rats eat the grains and destroy the roots. *Insects* even in larvae stage eat the leaves of the plants. Bacteria, fungi and viruses cause diseases to plants, for example, rust and smut in wheat and blight in rice.

Fig. 1.9 : Scarecrow

The chemicals which are used to kill pests are called pesticides. Pesticides are chemicals which selectively kill the pests, as well as their eggs and larvae, but do not harm the plant. Pesticides are mostly insecticides such as BHC (Benzene Hexachloride), DDT, malathion, parathion, diazinon,

etc. Insecticides are sprayed at an appropriate time of the life cycle of the pests.

There are some disadvantages of pesticides also. They also kill the useful organisms like earthworms. They even pollute the atmosphere. Ultimately they reach the body of man and cause harm. Grains, fruits and vegetables often have a coating of pesticides. Therefore, they should be washed off before they are eaten or used.

Fig. 1.10 : Crop is being sprayed with a pesticide

Harvesting

Collecting the ripened crop from the fields is called harvesting. In India we have two main crops— (i) *Kharif* crop and (ii) *Rabi* crop.

Sowing season for the *Kharif* crop starts at the beginning of the south-west monsoon (June to July) as more water is needed by these crops, e.g. rice. The *Kharif* crop is harvested at the end of the monsoon season during September or October.

Rabi crop is sown at the beginning of winter (October to December) and harvested by March or April. Wheat is a *Rabi* crop and paddy is a *Kharif* crop. But in well irrigated areas paddy can also be sown as a *Rabi* crop.

Fig. 1.11 : Mechanical harvester

Fig. 1.12 : Harvesting of crop using sickle

Crops are removed or cut by hand using a sickle or in large fields by a mechanical harvester.

Threshing: The harvested plant has grains with husk or chaff. Separating the grains from chaff is called threshing. Threshing was done earlier with the help of animals. Now a days this is done with a machine called thresher. A motorized machine 'combine' is also used for both, harvesting and threshing. Combines are used on large agricultural farms.

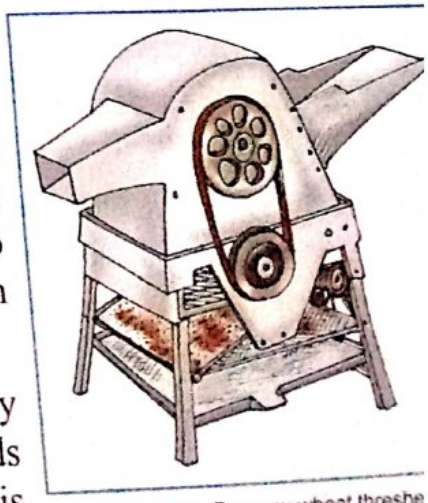


Fig. 1.13 : Drummy wheat threshe

Winnowing: The mixture of the seeds and chaff is separated by winnowing. The mixture is allowed to fall from a height. The seeds being heavier fall straight to the ground while the light chaff is

blown a little farther away by the wind. Thus the gravity of the earth and the density of the material help in the winnowing process.

Fig. 1.14 Winnowing

Storage of Grains

Grains are dried in the open sun and stored away from moisture. Now a days, grains are weighed into gunny bags and transported to godowns. Grains are protected from insects, rats and moisture. Proper amounts of insect repellants are mixed with the grains to protect it while storing.

1.5 Crop Improvement

In 1951, India had agricultural production of 45 million tonnes. In 2011, the production increased to 245 million tonnes. This increase of 200 million tonnes in crop was the result of the following main factors:

1. Hybridization

A plant species has many varieties. Any single variety does not have all the desired characteristics. One variety may be sturdier (greater resistant to diseases and pests) while the other better yielding (good producer). Cross-breeding of both the varieties gives rise to a new variety having both the characteristics. Fertilization of the ovary of plants of one variety with the pollen of the plants of other variety is called cross-breeding. The process of crossing two different varieties each having certain desirable characteristics is called hybridization. The new variety produced is known as hybrid. It has the characteristics of both the varieties.

Indian Agricultural Research Institute, Pusa at New Delhi has developed new varieties of wheat, rice and various vegetables by hybridization. Some high yielding varieties are as follows:

Wheat	:	Sonalika, Kalyansona, Sarbati Sonara, Hira, Moti
Rice	:	Jaya, Padma, IR–8
Brinjal	:	Pusa Kranti, Pusa Purple

2. Soil Improvement

Repeated growing of the same crop depletes the soil severely of specific nutrients. Thus the yield is reduced. To replenish the soil, manures and fertilizers containing Nitrogen (N), Phosphorous (P) and Potassium (K) particularly, are added. Fertilizers containing these elements are called NPK.

3. Protection from Pests and Weeds

Pesticides such as malathion, disyston and BHC are sprayed to control insects that eat off or damage the crops. Since most chemicals cannot differentiate between useful and harmful insects and have adverse side-effects, biological control of pests is safer. For example, male population of insects are attracted into a trap which contains a small amount of the female hormones.

Some birds and insects, which feed on weeds and pests are deliberately introduced in the crop field.

The weeds compete with crops for nutrients. Special chemicals called weedicides are sprayed to control their growth. 2 , 4–D and metachlor are two commonly used weedicides.

Weeds are also removed by using *khurpa* or harrow.

4. Control of Plant Diseases

Fungi, bacteria and viruses cause diseases in crop plants. Insects may act as their carriers. For example, rust and smut of wheat and potato blight are *fungal diseases*. *Leaf blight* of rice is a *bacterial disease* and potato mosaic is a *viral disease*. Some of these diseases are transmitted through seeds while others are soil-borne or airborne. Fungicides are used to fight against the fungal diseases. The various fungicides are Agrosan, Bordeaux mixture, Dithane M–45, Dithane–79, etc. An antibiotic, streptomycin is used against bacterial diseases.

5. Better Storage

To protect the stored grains from moisture, godowns are made of cement with roofs of galvanised iron sheets. The rain water cannot seep into walls, floors or roofs. *Birds* and *rodents* cannot enter these godowns. *Insects* are kept away by repellents, sprays, fumigation and dusting of insecticides like malathion. In homes, the well dried grains are stored in tight fitting bins of aluminium or galvanised iron sheets with insect repellant.

1.6 Dairy Farming

In India, dairy farming started growing in a planned way with the establishment of the National Dairy Development Board at Anand (Gujarat) in 1965. The Board launched a project called "Operation Flood" in 1970 to build a viable and self-sustaining national dairy industry on cooperative lines. The Indian dairy has achieved exceptional growth in the last 30 years, making India one of the largest producers of milk in the world. Consequently, the import of milk solids, milk powder, butter, oil, etc. has already ceased. In fact, India is exporting thousands of tonnes of milk powder to its neighbouring countries.

Milk Producing Animals

Milk producing animals of India are cows, buffaloes, goats and camels. Goat's milk is nutritious and in some areas is preferred to cow's milk. The buffalo's milk contains more fat than cow's milk. Buffaloes are the main source of milk in our country.

Cows: We have three types of breeds of dairy cows :

(i) Indian breed or indigenous breed which includes Red Sindhi, Sahiwal and Gir.

(ii) Exotic breeds or foreign breeds of cows which include Jersey, Holstein Friesian and Brow Swiss. Friesian cows give the most milk, but it is low in butterfat. Jersey cows give richer milk.

(iii) Improved breeds or cross-breed cows include Karan Swiss, Karan Fries and Frieswal. T yield of milk of new cross-breed cow is two to three times more than our indigenous cows.

Buffaloes: In India, buffaloes are domesticated in large numbers. There are about ten breeds buffaloes in India of which Murrah, Mehsana and Surti are popular breeds.

Feeding of Dairy Animals

Besides weeding or removal of unproductive animals, milch animals require proper feeding. The feed of these animals includes grasses, dry fodder (wheat chaff), legumes like clover, alf The feed is mainly of two kinds—(i) roughage, mainly green fodder and (ii) concentrate, *i.e.* c

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and millets. Oil cakes made from mustard and cotton seeds are also added to improve the quality of the feed.

Disease of Milch Animals

Cows and buffaloes suffer from various diseases. These diseases can be broadly classified into two main categories—parasitic diseases and infectious diseases.

Parasitic Diseases: The external parasites, such as fleas, lice, ticks and mites live on the skin of cows and buffaloes and mainly cause skin diseases. Buffalo leech sucks the blood of buffalo and causes anaemia. Some internal parasites, such as worms, affect stomach and intestine of buffaloes and cows.

Infectious Diseases: These diseases are mainly caused by micro-organisms, such as bacteria and viruses. They are communicable diseases and spread by contact from animal to animal. These diseases include foot and mouth disease, pox or vaccinia, blue tongue and rinderpest. Some bacterial diseases are anthrax, black quarter and mastitis.

Symptoms of Sick Animals: In case of foot and mouth diseases, blisters appear on the feet and in the mouth of the animal. Animals show high temperature with occasional shivering. Sick animals, like humans, become lazy and inactive due to weakness. They usually stop taking food and water. Their eyes start watering and excessive secretion of saliva takes place.

1.7 Poultry

The practice of keeping and breeding chicken and other domesticated fowls is known as poultry. The other birds commonly bred are geese, turkes and duck.

Feed of Poultry Chicken: The common poultry feeds are grains and wet mixtures or meshes. These birds need hard grit or stones in their food which they use for grinding the food. Calcium carbonate present in some grits or the feed, is used to make egg shells. Hens need a lot of water. If they do not take enough water, they lay less number of eggs.

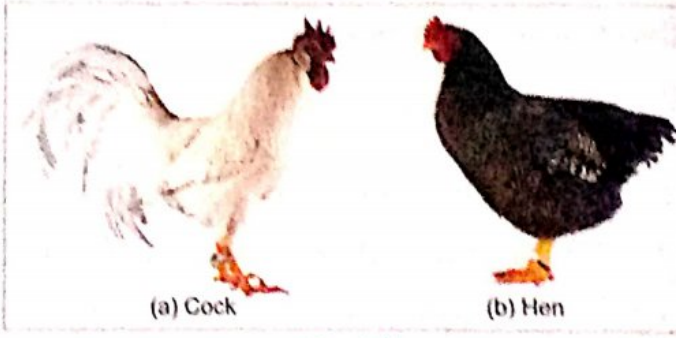

Fig. 1.15

Laying of Eggs: Hens start laying eggs at the age of six months. An egg laying bird is called brood hen. Rhode Island Red, Black Minorca and HH260 are high egg-yielding breeds of hen. HH260 so named because it can lay upto 260 eggs in 12 months. The shell of egg is made of calci carbonate. Inside the shell there is a white portion called albumin. In the centre of the albumin th is a yellow portion called yolk.

Test of Eggs: The quality of an egg can be tested in the following simple ways:

(i) See the egg against any source of light. The inner material may move to one side and it appear transparent. If so, it is an infertile egg. On the other hand, if the egg has dark round bod the centre, it is a fertilized egg.

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(ii) Put the egg in warm water. If it floats, it is a spoiled egg. If it settles at the bottom of the water, it is a good quality egg.

Diseases in Poultry Birds: The germs of cholera, chickenpox, etc. infect the poultry birds. Roundworms cause disease of the digestive tract. Ticks and mites also affect the birds.

1.8 Fisheries

Production of fish is called fishery or pisciculture. From pre-historic times, fish have been used as a protein rich diet for human beings, particularly those living in coastal areas. In India, fish are abundantly available from sea, rivers, lakes and ponds.

Important Edible Fish of India: On the basis of their habitat, fish are mainly divided into two categories : marine fish (sea-fish) and fresh water fish.

Marine fish include Bombay duck, eel, hilsa, pomphret, salmon and sardine. Fresh water fish include rohu, calbasu, catla, singhara, magur, singhi and malli.

Fish Culture: Fish are reared in small rivers, lakes, canals and specially designed ponds called breeding ponds. In fresh water fisheries, fish eggs (called fish seeds) are put in nurseries known as hatcheries. The young ones hatched from the eggs are fed, tended and nursed, and finally harvested, when fully grown. Culturing fish in fresh water is known as inland fisheries.

Marine fish are captured from the sea coast by using fishing boats, electronic locaters, baits, nets and trawlers.

Conservation of fish is done by deep freezing, sun drying, salting or canning.

1.9 Apiculture

Apiculture or bee-keeping is the rearing and management of honeybee for the production of honey and wax. Honey bee can be easily domesticated because of its amiable temperament. Like all other insects, it possesses two pairs of wings and three pairs of legs. It is a social insect and the colony of honeybees live in the nest called hive or comb. These beehives are seen hanging from the branches of trees or deserted buildings and overhead water tanks.

The honey bees are also reared in boxes. These boxes are called apiaries. Bees develop hives on the frames in the box. All activities of the bees are restricted to the box.

Life Cycle of Honeybee

The complete metamorphosis comprises of four stages *i.e.* egg, larva, pupa and adults. The queen bee lays eggs in each cell of the comb. Egg hatches into larva after three days. The larval stage lasts for six days. Then the larva changes into a pupa. The pupa takes seven days to become an adult (imago).

Depending upon the functions there are three types of adults in the colony of honeybee. These are (i) Queen, (ii) Drones or male insects, (iii) Workers.

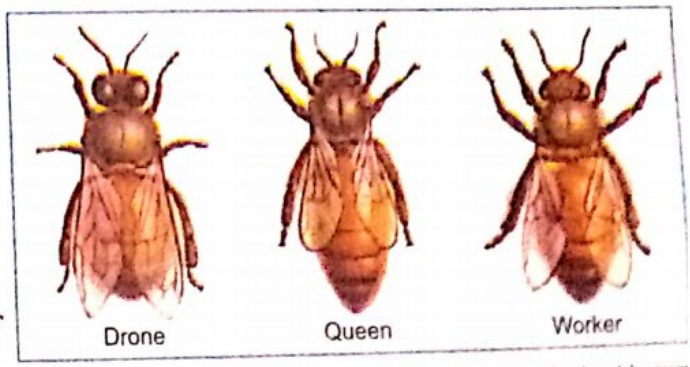


Fig. 1.16 : Honeybees like the ones shown here are the best-known kind of bee, but altogether there are over 12,000 different species throughout the world.

Honey: Honeybees collect nectar from flowers and make honey. Honey is extracted from beehive by using an extractor. It is stored in clean and airtight bottles. Honey is sometimes adulterated wit sugar and *gur*. It can be tested by a simple test.

Test for Purity of Honey: Take a glass of water. Add a few drops of honey to it. If the drops form continuous threads of honey, it is pure honey. Impure honey will not form thread and would ge dissolved in water.

1.10 Care and Shelter of Animals

The requirement of proper care and shelter for animals, specially cows and buffaloes, is a must fo the health of the animals and for the production of clean milk. Both cows and buffaloes need regula brushing to remove dirt and loose hairs. They should be sheltered under roofed sheds that protec them from rain, heat, direct sunlight and cold. The floor of the cattle shed should be made slopin for easy cleaning and keeping their sitting place dry. In the shelter, the animals should be provide with feeding passage and feeding trough. The shed should also be provided with cross ventilation.

1.11 Protection Against Diseases

You have already read about the parasitic and infectious diseases of animals. To prevent diseases t animals the following safeguards should be taken:

1. The animals should be kept in good shelters; this reduces the risk of diseases.
2. The animals should be provided nutritive food and clean drinking water.
3. The animals should get regular bathing.
4. The sick animals should be kept isolated.
5. Vaccines should be given to animals to immunise them against certain diseases.
6. Some diseases, caused by external parasites, can be controlled by the application of dilu solution of insecticides.
7. The rats should be kept away from shelters.

1.12 Nitrogen Cycle

About 78 per cent of the atmosphere is made up of "free" nitrogen or nitrogen that is not combined with other elements. Almost all living things need nitrogen to help build proteins and contain other body chemicals. However, inspite of being surrounded by nitrogen gas, most organisms cannot use this free nitrogen in the air. Most living things can use only that nitrogen which is combined with other elements in compounds.

Fig. 1.17 : The tiny round structures on the roots of this pea plant contain nitrogen-fixing bacteria.

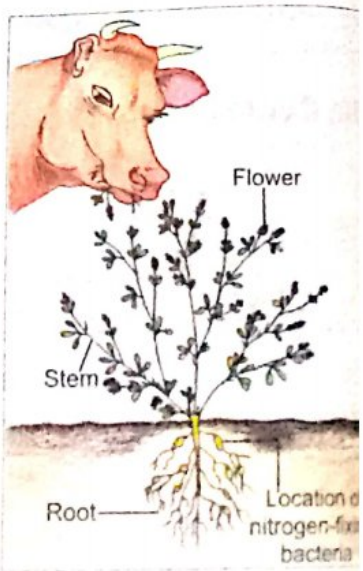


Fig. 1.18 : Nitrogen-fixing bacteria the roots of alfalfa plants

Nitrogen Fixation

A few kinds of bacteria can take nitrogen directly from the air and form nitrogen

compounds. This process is called nitrogen fixation. Nitrogen-fixing bacteria turn nitrogen gas which plants cannot use for food, into nitrogen compounds that plants can use for food. These nitrogen-fixing bacteria often appear as lumps on the roots of plants known as legumes including beans, peas and peanuts. The roots of plants such as alfalfa are also favourite site for nitrogen-fixing bacteria.

Nitrogen-fixing bacteria also help replace the nitrogen compounds in the soil. Without such nitrogen-fixing bacteria, most nitrogen compounds in the soil would be quickly used up and plants could no longer grow.

Nitrogen Cycle

The formation of nitrogen compounds by bacteria is only the first step in the process which is known as the nitrogen cycle. Plants use the nitrogen compounds to make food. Animals may then eat plants or other animals that have eaten plants. When the plants and animals die, the nitrogen compounds return to the soil. Nitrogen can go back and forth between the soil and plants and animals many times before re-entering the atmosphere. Eventually, however, bacteria called denitrifying bacteria break down nitrogen compounds such as nitrates. In the process, free nitrogen is released into the air. The cycle is then complete.

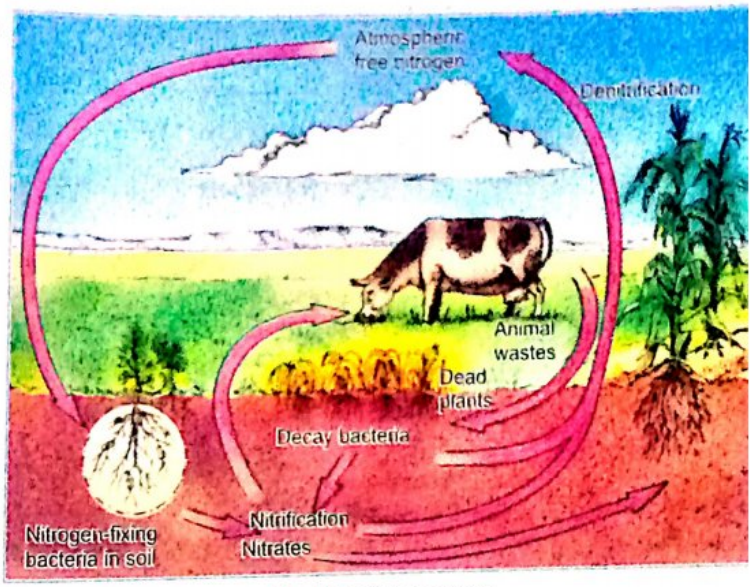


Fig. 1.19 : Nitrogen Cycle.

POINTS TO REMEMBER

- The various steps performed by a farmer to raise a crop successfully are called agricultural practices.
- To make the soil capable to fulfil the needs of the plants is called preparation of the soil.
- Selection of seeds is an important step in crop raising. Only certified seeds should be sown.
- The process of putting seeds in the soil for growing the crop plants is called sowing.
- Manures supply essential elements and humus to the soil.
- Irrigation is a process by which water is supplied to the crop in a field.
- The process of removing weeds from a crop field is called weeding. The unwanted plants (or wild plants) which grow along with a cultivated crop are called weeds.
- Crops need to be protected from birds and pests particularly at the time of formation of grain.
- The process of cutting and gathering of the matured crop is called harvesting.
- The process of beating out the grains from the harvested crop is called threshing.
- The grains should be dried in the open sun and stored away from moisture.
- Dairy farming has grown in India at a tremendous speed and India is one of the largest producer of milk in the world.
- Diseases are caused in animals due to infection caused by bacteria, viruses and worms.
- The practice of keeping and breeding chicken and other domesticated fowls is known as poultry.

- Production of fish is called fishery or pisciculture.
- Rearing and management of honeybee for honey and wax is called apiculture.
- A few kinds of bacteria can take nitrogen directly from the air and in the form of nitrogen compounds. This process is called nitrogen fixation.

EXERCISES

I. Tick (✓) mark the correct answer (Multiple Choice Questions): Do self

1. Which one of these is a plantation crop?
   (a) Wheat (b) Cotton (c) Groundnut (d) Rice
2. Which one of the following is not a cereal?
   (a) Rice (b) Wheat (c) Groundnut (d) Barley
3. *Kharif* crop is harvested in:
   (a) March (b) July (c) October (d) January
4. To improve the varieties of crop, the technique used is called:
   (a) broadcasting (b) transplantation (c) manuring (d) hybridization
5. Separation of chaff from the grain is called:
   (a) threshing (b) winnowing (c) harvesting (d) spraying

II. Fill in the blanks with appropriate words:

1. The process of loosening and turning the soil is called .....
2. Selection of seeds is an important step in .....
3. The top soil has a dark layer made of .....
4. Infectious diseases are mainly caused by .....
5. About ..... per cent of the atmosphere is made up of nitrogen gas.

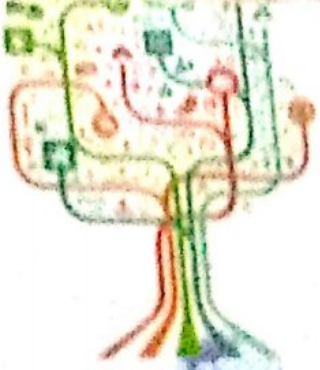
III. Write true (T) or false (F) against each statement:

1. The process of loosening and turning the soil is called ploughing.
2. Seeds should be sown on the surface of land.
3. 2, 4-D is a weedicide.
4. Bee-keeping is called apiculture.
5. Murrah and Surti are breeds of buffaloes.

IV. Match the following:

A	B
1. Plank	(i) Irrigation
2. Drill	(ii) Levelling
3. Harrow	(iii) Harvesting
4. Water-wheel	(iv) Sowing
5. Sickle	(v) Weeding

Concept of Networking



Network entails a number of computers and other devices that are connected together so that equipments and information can be shared. Computers that are a part of a network can share resource, information and, at the same time, work independently. Networks can be of various sizes. There can be as large as thousands of computers and as small as just two computers. In this chapter, we will discuss the ideas and principles related with a network.

Networking

SIGNIFICANCE OF A NETWORK

Networks are established for the purpose of sharing and saving information. They have made communication cheaper and faster and also help in saving resources. Let us see how a network can help us in a detailed way.

- **Share and Save Resources:** If a computer is on a network, it can share resources, thereby reducing the cost of hardware. Computers on a network can share resources like printers, modems, scanners, plotters, CD drive, USB ports etc. This reduces the need for buying individual hardware like printers, modems etc. for each and every computer.
- **Storage Media:** When a computer network is established, one computer acts as the main computer or the server. This server serves or distributes the software or hardware that the other networked computers would need. For example, there is software that is needed only for a particular purpose. In this case, the software can be stored on the server from where all the other networked computers can access it and use it as per their convenience. Once their work is over, they may delete the software. If needed, they can always download or use the required software from the server once again.
- **Effective Backup:** Networked computers can act as backups for one another. You can make two copies of important files and save them on another networked computer or the server. If one system faces hardware failure, at least the data is not lost, which ultimately is the most important. On the other hand, you can also work on another networked computer, if a computer is not working.
- **Effective Means of Communication:** A network forms a very effective means of communication as it provides cheap and quick communication. For example, an office has branches all over Indi and it wants to communicate certain information to all its centers immediately. The best, cheapes and the most effective way of doing this would be through a network.
- **Sharing Information:** Information can be easily shared among the computers connected vi network. For example, all the other computers in the network can access the information stored i any computer.

- **Makes Administration Easy:** A network makes the work of the person looking after computers extremely easy from the administration point of view. The person can sit at one place and still keep an eye on all the computers being used. He/she can troubleshoot from the same point and also help in the effective allocation of resources.
- **Effective Security Measure:** The security of a network can be managed through passwords and user names. Certain rules and conditions can be set on the network in order to prevent any kind of unwanted people from accessing the network. Also, when all the important files are saved at one place, it is easier to protect them.

Thus, there are a number of reasons why a network of computers is needed. As a matter of fact, networks have become an essential part of our daily lives, whether it is our network of friends or the network of mobiles. All kinds of networks play an important part in our lives.

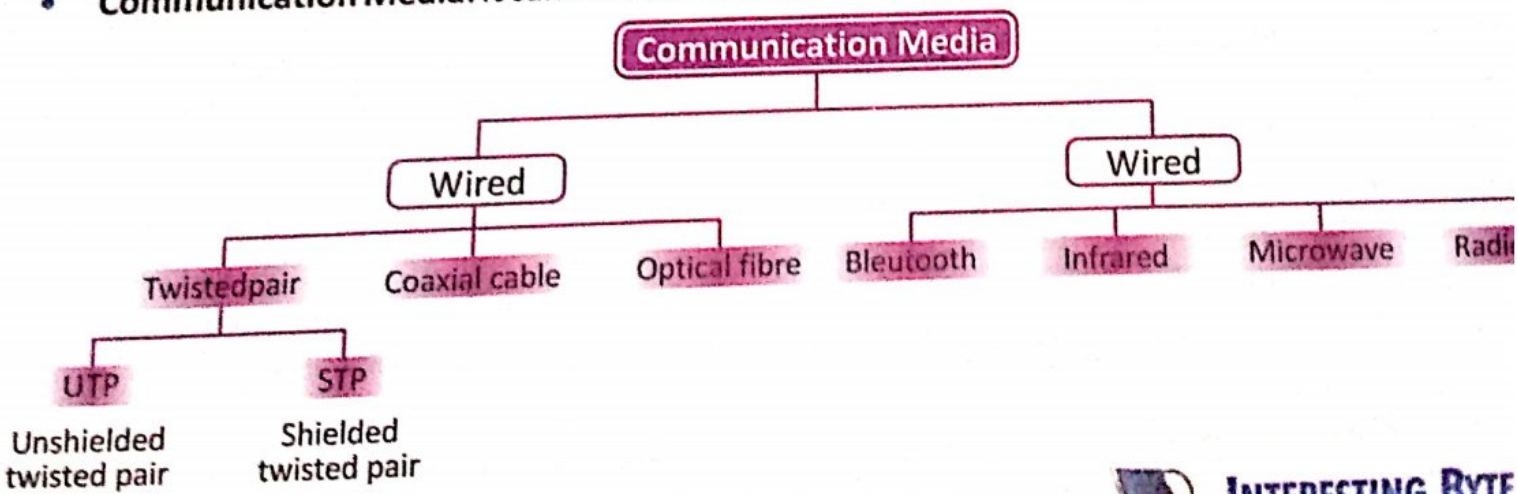
ACTIVITY SESSION

1. What is Network?
2. 'Networking helps in effective communication.' Do you agree?

PARTS OF A NETWORK

Even if only two computers are connected, they are said to be in a network. A network is made up various parts or components as follows:

- **Network Interface Card (NIC):** It is differentiates between a networked computer and a stand-alone computer. Every computer in the network has one NIC. It has a port that helps to join the network cable to the computer.
- **Communication Media:** It can be wired or wireless.



- **Wired Network:** Electrical cables like (twisted pair coaxial cable or optical fibre) are used to any signals from one end to other.
- **Wireless Network:** They do not use cables instead the signals are transmitted using Bluetooth, Infrared, microwave or Radiowave.

INTERESTING BYTE

The computers that are a
of the network are ca
Nodes or workstations.

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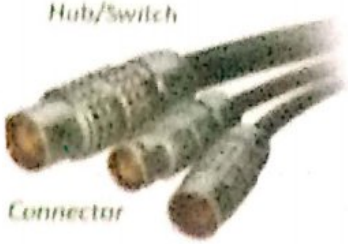
Modem

- **Hub/Switch**: Hub/Switch is a device that connects a number of computers together to make a network.
- **Modem**: Modem is a device that joins the digital computer to the analog telephone line. It converts digital signals to analog signals and vice versa.

Hub/Switch

- **Connector**: RJ45 connectors are used for the twisted pair cable to connect it with the NIC card.



Connector

INTERESTING BYTE

Wi-Fi (Wireless Fidelity) is a technology to connect electronic devices to a wireless LAN.

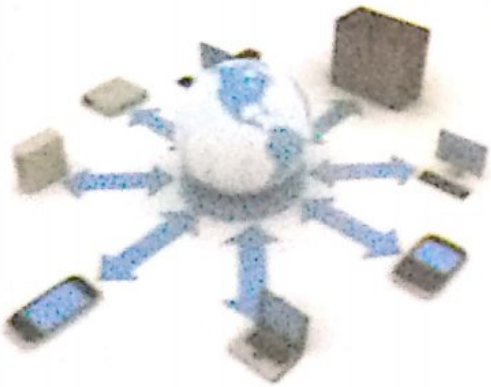
TYPES OF NETWORK

Networks can be of various types. Let us study these in detail.

- **Personal Area Network (PAN):** A Personal Area Network is smallest network which is very personal to a user. This may include Bluetooth enabled devices or infrared enabled devices. PAN has connectivity range up to 10 metres. PAN may include wireless computer keyboard and mouse, bluetooth enabled headphones, wireless printers and TV remote.

Bluetooth

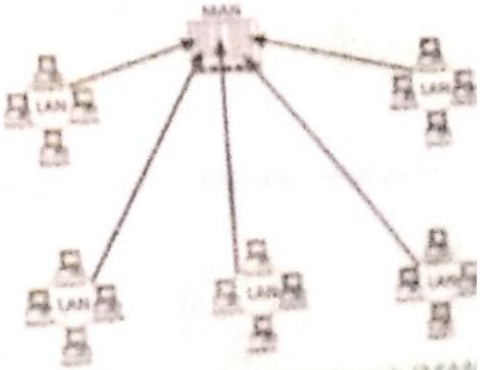
For example, Piconet is bluetooth- enabled Personal Area network which may contain upto 8 devices connected together in a master-slave fashion.



Local Area Network (LAN)

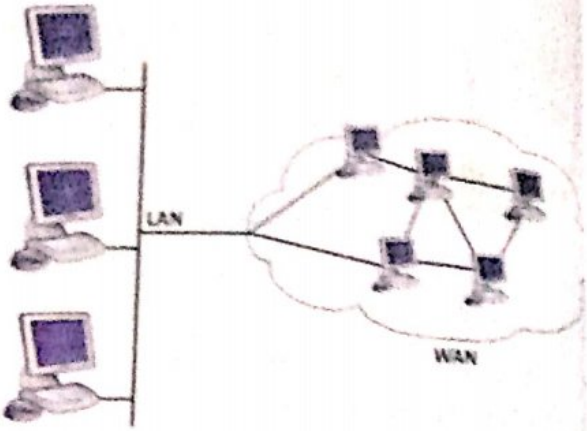
- **Local Area Network (LAN):** A Local Area Network is a network that is used to connect personal computers in a local area or in a small area. A small area would be an office or a building. A LAN is used extensively in offices as it enables its users to use resources like printers, scanners, plotters, speakers, etc. on a common basis. If all the computers in an office are connected to one another, an office does not need to spend extra money on getting individual printers for everybody or waste time in connecting the printer to the computer where prints are needed.

- **Metropolitan Area Network (MAN):** A Metropolitan Area Network is a network that is used to connect personal computers or other electronic devices, such as mobiles and televisions, in an entire city. It can also be used to connect various LANs located in the same city. A very good example of a MAN is the cable that we receive in our homes. The cable wires are the way in which all of us can receive the same type of information from the same source.



Metropolitan Area Network (MAN

- **Wide Area Network (WAN):** A Wide Area Network is a network that is used to connect personal computers over large geographical areas, such as continents. These are also used to connect LANs in remote areas so that they may function as a WAN. The purpose of setting up a WAN is to share information. The best example of a WAN is the Internet, as it is over the internet that a number of computers, no matter which country they are in, can be connected to one another. WANs are generally used by very large companies or government agencies. They require a public telecommunication media like the telecommunication lines or the satellite signals in order to transfer data. Other examples of WAN include the ATM facilities that your parents use, net banking and the telecommunication services that you use.

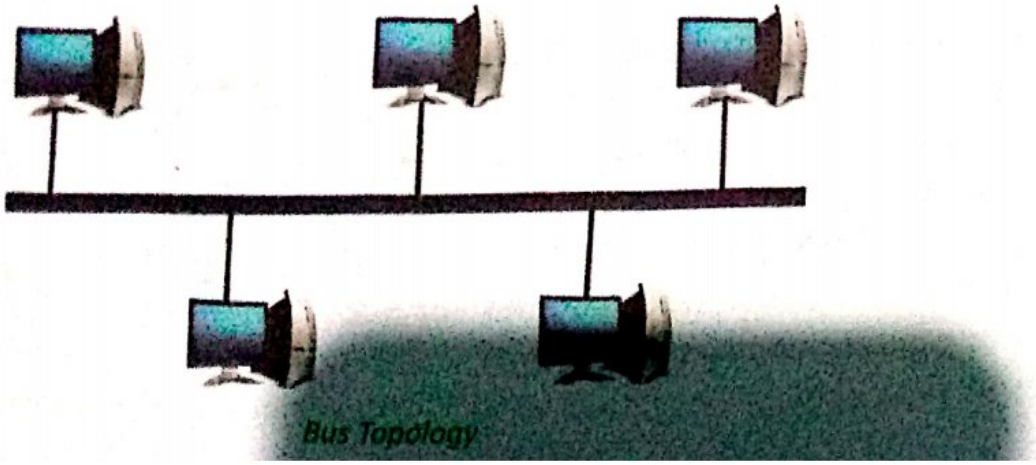


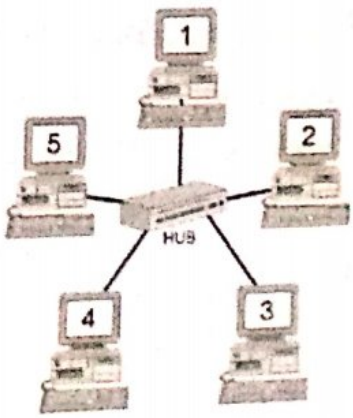
Wide Area Network (WAN)

NETWORK TOPOLOGY

All kinds of networks work on a particular format of arrangement. The different formats o arrangement of computers in a network are called Topology. There are various types of topologies tha a network can use. The most common topologies available are Bus, Star, Ring and Tree. Let us lear about these network topologies in a detailed way.

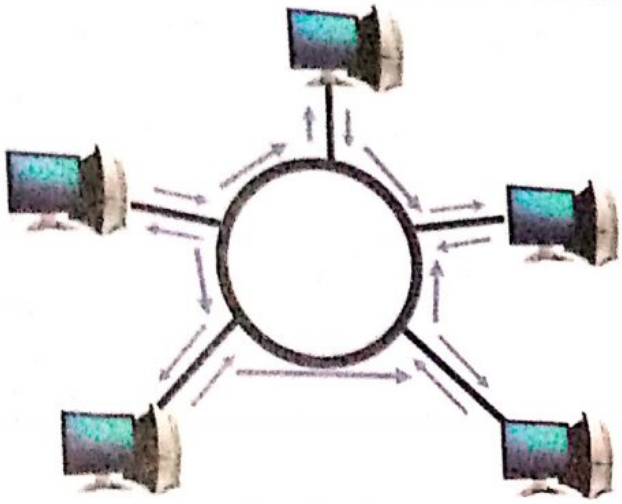
- **Bus Topology:** In this technology, a single wire, called a bus, with multiple points is employed. Al the computers, printers and other hardware are connected to this wire. Any electronic signa passed by any node can be received by all the nodes on this wire, as the signal can travel in both directions. The bus has terminals at its end so that the signals passed may be observed by them They do not clutter the network line. This network has been named in such a manner because th wire employed in this topology resembles the route that a bus would take.
- **Star Topology:** In this technology, all the computers are connected to a central hub, called a serve All the computers are connected individually with separate wires to the central hub. The centra hub can be set in such a way that it can or cannot control all the signals passing through th network. When the server controls the signals passing through the network, it is referred to as a active server. When it does not control the signals passing through the network, it is referred to as passive server.


Bus Topology

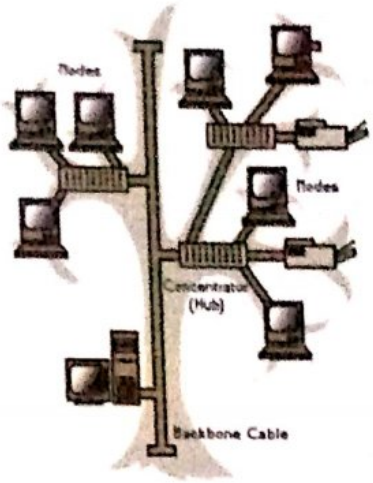


Star Topology

- **Ring Topology (Circular Topology):** This technology uses multiple links to form a loop of computers. Each computer is connected to the loop, thus forming a kind of a ring or a circle. A message or a token goes round the loop continuously. All the computers or the nodes are equipped with a Token Ring Adapter Card (TRAC), which helps them to read the token or the message that passes through the loop continuously.
- **Tree Topology:** Tree topology is a combination of the Bus and the Star topology. In this type of a network arrangement, you can have multiple servers. These servers can be interconnected so that a user may access their own server as well as the bigger server, when needed. This technology is used when there are a large number of computers to be connected and there are distinct branches of an organization that need to be connected. It requires a lot of cables to be employed and the success of the tree topology depends on the cables used.



Ring Topology



Tree Topology

SECURITY OF NETWORKS

When you establish a network, you allow a number of people to access and share important data stored in the computers on the network. For this purpose, the network needs to be secured. There are generally two ways in which a network can be secured. Let us learn about both of these in a detailed manner.

- **Login Security:** Using this security measure, all the users who want to access the data are given unique user names and passwords. Only those people who have a username and a password can access that data.
- **Rights Security:** Rights security is a step forward to login security. Using this security measure, limited access rights can be given to users. Depending on the username, the access rights are limited to certain folders, where the user can access only certain folders pertaining to his/her own work.

INTERESTING BYTE

Cloud computing means storing and accessing data over internet instead of computers hand drive. i.e., Microsoft One Drive, Google Drive, Apple i cloud, etc.

Thus, we see that it is extremely important that the network is protected and unwarranted access usage of data can either be prohibited or controlled. Under the Rights Security, if someone tries access someone other's files, a Rights prohibited message will pop up and the network administrator will be informed that a certain unauthorized person is trying to access the information.

Activity Session

1. What is server?
2. Define Circular Topology.

Let us Recall

- Network entails a number of computers and other devices that are connected together so that equipment and information can be shared.
- Networks have made cheaper and faster communication possible and also help in saving resources.
- A network of computers is needed for effective means of communication, effective backup, effective security measure, easy administration and as a storage media.
- A network consists of Transmitter, Receiver, Server, Wire, Connector and Network Interface Card.
- Networks can be of various types such as Local Area Network (LAN), Metropolitan Area Network, Wide Area Network (WAN), and Personal Area Network (PAN).
- The different formats of arrangement of computers in a network are called Topology.
- Network technology includes Bus topology, Star topology, Ring topology and Tree topology.
- Security of networks can be done in two ways namely Login security and Rights security.
- It is extremely important that the network is protected and unwarranted access and usage of data can either be prohibited or controlled.

Brain Developer

Q. Tick (✓) the correct option: Do Self

1. Which of the following is a device that joins the cable to the computer in a network?
   (i) Transmitter ☐ (ii) NIC ☐ (iii) Server ☐
2. Which of the following networks is a very good example of MAN?
   (i) Cable T.V. ☐ (ii) ATM ☐ (iii) Net banking ☐

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3. Which among the following topologies are used by multiple servers?

(i) Ring topology (ii) Tree topology (iii) Bus topology

4. Which of the following types of network is used to connect personal computers over large geographical areas?

(i) WAN (ii) LAN (iii) MAN

5. Which among the following terms is used for the different formats of arrangement of computers in a network?

(i) Connector (ii) Topology (iii) Server

3. **Fill in the blanks using the given clues:**

Transceiver Rights Network Tree Area of network

1. _____ entails a number of computers and other devices that are connected together.
2. Computer that can receive and send messages are called _____.
3. Based on the _____, there are four types of networks– PAN, LAN, MAN and WAN.
4. _____ topology is a combination of the Bus and the Star topology.
5. _____ security is a step forward to Login security.

Write (T) for true and (F) for false statements:

1. Networks make communication cheaper and faster and help in saving resources.
2. A transmitter is used to receive signals.
3. LAN is used to connect personal computers in a local area or small area.
4. A temporary network can be set using a modem.
5. A permanent network is established for a short period of time.