



# Iqra Educational Institute

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## Vacation – Instructions

The Jammu & Kashmir region has encountered situational swings and the Education sector was particularly disturbed due to these uncertainties. Session swing from November to March and now its retreat from March to November. Introduction of National Education policy 2020.

These disturbances were transmitted to the tender buds studying in our institutions. Keeping in view all these facts we have to work together to bring these children on track. There are policy changes in pedagogical concerns. The methodology that was earlier child – centered-learning, has now shifted to skill learning whereby concepts of literacy , numeracy and other rational and ideological aspects need to be stressed.

- The entire session is divided into six sessional segments. We have to prepare our children for the new policy and improved pedagogy.
- The assessment and evaluation is stress free and is indirect. This will help children to be free from examination phobia.
- New concepts of short term hands -on -work and long term planned project-work will make learning skills easy.

Initially it looks like an uphill task but by the passage of time things will ease out for all the stakeholders.

- The vacation period should be, as such, utilized judiciously . Let the children enjoy the vacations as they please but they should not be totally de-linked from their studies.
- Moral training could be stressed in the form of cultivation of universal values.
- Habits of Salah performing 5 times a day with regularity and punctuality.
- Productive and positive physical work to be included in their routine work. Let them not sit idle for hours together at a place.

The basics of monotheist ideology to be inculcated informally in the children.

We are providing you with the assignment as per afore-mentioned strategy. It needs to be carried out in a cordial atmosphere.

**Note: All the work should be done on fair notebooks under the supervision of parents/guardian. The notes of science, social science and kashmiri should be preserved in note file. Whereas the comprehension work should be done on fair notebooks.**

# SCIENCE

## Chapter 1: Microorganisms: Friend and Foe



**8th**

## Chapter No. 1

# Microorganisms: Friend and Foe

### INTRODUCTION

About three hundred years ago, a Dutch store keeper, Antonie Van Leeuwenhoek, discovered a new world. He found this New World of living creatures that are present everywhere but are too small to be seen with the naked eye. These organisms are found in the air, soil, water, and plants, inside our bodies. Some of them cause diseases and are sometimes called pathogens (germs). Some of these tiny organisms are free-living while others live as parasites. These organisms are called microbes or micro-organisms. The scientists who study micro-organisms are microbiologists and the field of study is called microbiology. The major kinds of micro-organisms are i) Protozoans ii. Algae iii. Fungi iv. Bacteria v. Viruses. Micro-organisms are also present in our body and in dead and decomposed matter. Some of them may be parasites on other living beings. In adverse conditions these form protective shells called spores.

**DISCOVERY** :- It was the discovery of microscope that helped man to learn about micro-organisms. It was realized that only a handful of micro-organisms are harmful while most of them are beneficial. e.g. some bacteria can fix atmospheric nitrogen, which is useful for plants. Others help are utilized in the preparation of wines, pickles, vinegar, cheese, curds, aroma in tobacco, production of antibiotics and in sewage disposal. In 1675, Antonie Van Leeuwenhoek observed spermatozoa, bacteria with the help of a simple microscope and called them as animalcules. In 1857 and 1859 Pasteur observed that fermentation is a biochemical process. In 1872 Robert Koch observed that Tubercle bacillus is the main cause of Tuberculosis. In 1889 Shibasaburo Kitasato observed that tetanus disease is caused due to tetanus-gene. In 1929 Alexander Fleming observed Penicillium Notatum and prepared an antibiotic Penicillin from it.

### Major groups of Micro-organisms ?

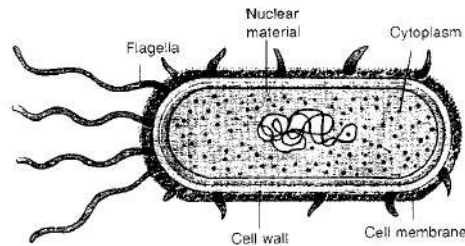
Micro-organisms are classified into five groups.

- i. Bacteria ii. Fungi iii. Protozoa  
iv. Algae v. Virus

i. **BACTERIA** : It was Antonie Van Leeuwenhoek in 1675 who observed bacteria with the help of microscope developed by him. The average size of bacteria is  $1.25\mu\text{m}$  where  $1\mu\text{m} = \frac{1}{1000}\text{mm}$ . Bacteria have primitive type of cell structure. They don't have membrane bound organelles or well organized nucleus. Their cell wall is rigid and cytoplasm is granular, viscous and lies between nuclear membrane and plasma membrane, on the basis of their shape. Bacteria are divided into three types:-

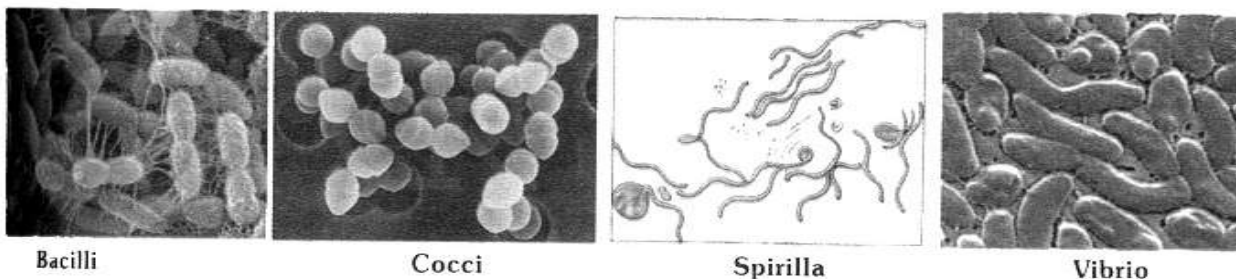
- a) Bacillus or rod shaped e.g lactobacillus, pseudomonas
- b) Coccus or spiral e.g Streptococcus, Micrococcus etc.
- c) Spirillum or Spiral e.g vibrio, Treponema etc.

Bacteria can be further divided into two group i.e. gram positive and gram negative. On the basis of their reaction to gram stain. Some retain stain while others do not. The cell of bacterium has an outer most covering “the cell wall”. There is no well developed nucleus but the nuclear material is found scattered in the jelly like substance known as cytoplasm,



Bacteria move with the help of thread like structures called flagella. There is a hard protective coating on the cell wall called cyst in times of adversity, which help the bacteria to with stand adverse conditions. When favorable conditions prevail, bacteria start the process of reproduction. Bacteria show two types of nutrition autotrophs, which can synthesise their own food like green plants and heterotrophs, which utilize food synthesised by other organisms. Auto trophs are further divided into i) Phototrophs which utilize energy from sunlight and ii) chemotrophs which utilize energy of inorganic compounds.

Heterotrophic bacteria may be saprophytic or parasitic. Some species of bacteria require oxygen during respiration to break down food and release energy. They are called aerobic bacteria. Whereas a few that can live without oxygen are called anaerobic bacteria. Bacteria reproduce commonly by binary fission. Under favorable condition, the nuclear material divides first which is followed by cell division due to which the parent cell divides into two daughter cells that can separate or sometime cling together forming cluster chains or filaments

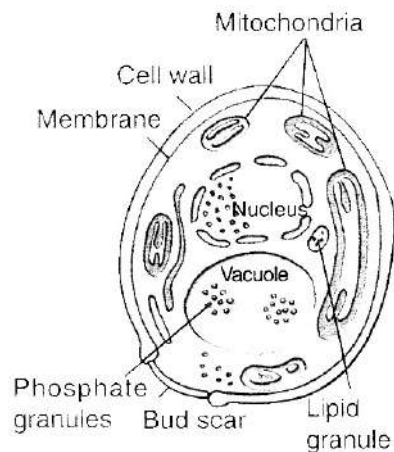


Certain Bacteria cause diseases in both plants and animals e.g cholera, diphtheria, pneumonia, tetanus, black rot in cabbage and fire blight in pears etc. Most of the bacteria are useful e.g Lacto Bacillus, nitrogen fixing bacteria Rhizobium, etc.

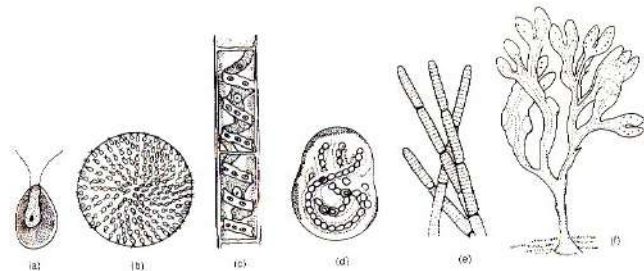
ii. **FUNGI** :- There are plant like micro – organisms but because they lack chlorophyll, they cannot make their own food. Most of them are saprophytic and some are parasitic in nature. There are around 70,000 species of fungi and their study is called *mycology*.

They can be easily identified growing on the moist tree trunks, damp clothes or leather goods, on stale bread etc. They have variety of habitats and prefer damp, dark and warm places to grow and are able to withstand extremes of temp. The cell consists of cell wall made up of cellulose having the nucleus in the center and all other components scattered in the cytoplasm. Fungi may also be unicellular and multicellular e.g yeast and mildews. Yeasts live in colonies and are aerobic as well as anaerobic. Mildews are parasitic found on potatoes, wheat, grapes etc.

Yeast cell could be spherical, elliptical or cylindrical in shape. Yeast reproduce by asexual mode by budding, by binary fission and spore formation. These are disseminated by insects, air and even through dust particles. They have strong liking for acidic food that contains sugar. They produce ethyl alcohol and large quantity of CO<sub>2</sub> in the process of fermentation. There are very important to industries producing beer, wine and other beverages. The yeast get destroyed in a few minutes even at the moderate temp. of 60°C.



iii. **ALGAE** : Algae are simple plant like organisms that can be easily found on the moist habitats. Some of them are unicellular and microscopic, while others are multi cellular. Algae are often named after their colour as (i) green algae e.g chlamydomonas, spirogyra etc. (ii) Blue green algae like NOSTOC, Oscillatoria etc. (iii) Brown algae like Fucus, laminaria. (iv) Red Algae like polysiphonia (v) Golden algae like Diatoms.

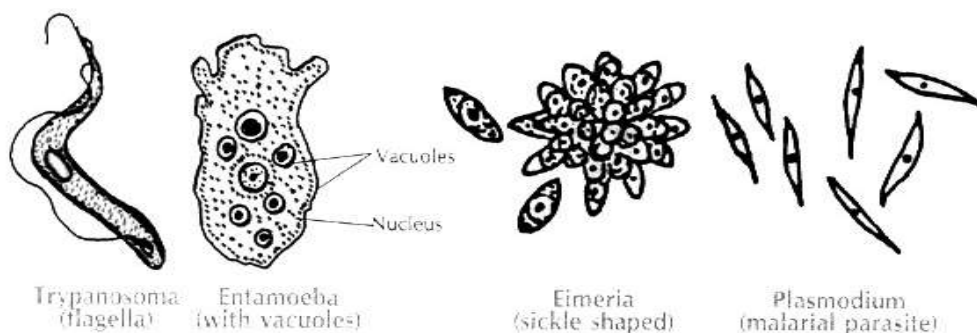




**Blue green algae:** There are many similarities between blue - green algae and bacteria that is why they are called cyanobacteria. They can also fix atmospheric nitrogen into usable compounds that is why these are being commonly used as fertilizers.

**DIATOMS:** Diatoms are microscopic algae that occur in springs estuaries, sediments and oceans. They are unicellular and are found in colonial and filamentous forms also. The cell wall of the organisms consists of two overlapping halves, hence are named as diatoms e.g Pinnularia, Cyclotella and Navicula. They reproduce vegetatively as well as sexually.

- iv. **VIRUS :** Virus are smaller than bacteria, Their presence can be determined only by observing the effect they have on their hosts or by viewing them under an electronic microscope. They replicate only inside living cells. Unlike other micro –organisms, Viruses do not have a cellular structure. A virus outside host cell remains like a non – living particle without any activity of living. They are found everywhere in air, water, soil and even in the body of living things. They possess certain physical and chemical properties. The important ones are their transmissible and parasitic nature. Antibiotics have no effect on viruses as they do not have their own metabolism. They are classified on the basis of the host in which they thrive e.g viruses found on plants are called plant virus, that on animals are called animal viruses and bacteria viruses or bacteriophages. They give rise to various diseases like rabies, polio, chicken pox, common cold, influenza and mosaic of tobacco and potato.
- v. **PROTOZOA :** Protozoans are unicellular microbes and are capable of performing all life functions. They are found in stagnant waters in ponds and puddles. They also occur on dead and decaying organic matter as saprophytes. Many protozoans are found living inside the body of other organisms as parasites. They are non green unicellular organisms with cell membrane, enclosing cytoplasm, nucleus, mitochondria, and other cell organelles. Euglena is the only protozoan which is green and includes chlorophyll. Locomotion takes place by means of protoplasmic projections called pseudopodia or flagella or cilia. They feed mostly on solid food particles. The parasitic forms live in the bodies of other living things and absorb digested food from the host. Protozoa reproduce both asexually and sexually. Plasmodium is a parasite and causes disease called Malaria. This parasite is transmitted by the bite of the female anopheles mosquito. It takes them along with the blood sucked from an infected person and transmits to a healthy person. Entamoeba causes amoebiasis which is characterized by pain in abdomen and repeated motions. Trypanosoma causes a dangerous disease called sleeping sickness, which is common in African Countries



## FOOD PRESERVATION

Preservation of food means saving food from moisture, warmth, microbes and oxygen. Raw and cooked food gets spoiled when stored at humid and warm place for long, Moisture and warmth breeds microbes like bacteria, fungi and worms which live on the moist food and destroy it. We can preserve food by different methods.

**DEHYDRATION OF FOOD** : It means removal of moisture from food. It is effective method of preservation. Many food products are dried in the sun. This prevents spoilage by micro – organisms. Fish, peas even green vegetables and spices are preserved by this method.

**SUGAR AND SALT** : are good preservatives and are most commonly used. They donot allow micro – organisms to grow. Thus, they are used in the preparation of jams, jelly & pickles etc. The cells of micro – organisms actually lose water in such solutions and finally die.

**REFRIGERATION** : The low temperature inside the refrigerator help, to preserve food for a long time because the growth of micro – organisms is retarded at low temperature.

**PASTEURIZATION** : This method is used to preserve milk and other food items also. In this method milk is heated to the temperature of  $62.5^{\circ}\text{c}$  for 30m or is kept at  $71.5^{\circ}\text{c}$  for 15 seconds after which it is quickly cooled.

**STERILISATION** : It means heating of food products at very high temperature almost to  $150^{\circ}\text{c}$  with steam. Food is then stored in air tight containers.

**CHEMICAL PRESERVATIONS** : are very commonly used to preserve food materials. Some most commonly used preservatives are Vinegar, Sodium Benzoate and Sodium Meta bisulphate.

## **NITROGEN CYCLE**

The cyclic pathway by which nitrogen is circulated continuously through the living and non living components of biosphere is called the nitrogen cycle. In this cycle five processes are involved . These are (i) Nitrogen fixation (ii) Ammonification (iii) Nitrification (iv) Denitrification and (v) Sedimentation.

i. **NITROGEN FIXATION** : The process of converting free nitrogen of the atmosphere in compounds of nitrogen is called nitrogen fixation. It Occurs in three ways.

**Atmospheric Fixation** :- During lightening high temperature is produced which allows the nitrogen to combine with oxygen in the atmosphere to form oxides of Nitrogen which are dissolved in rain water and get soaked into the soil and form nitrates.

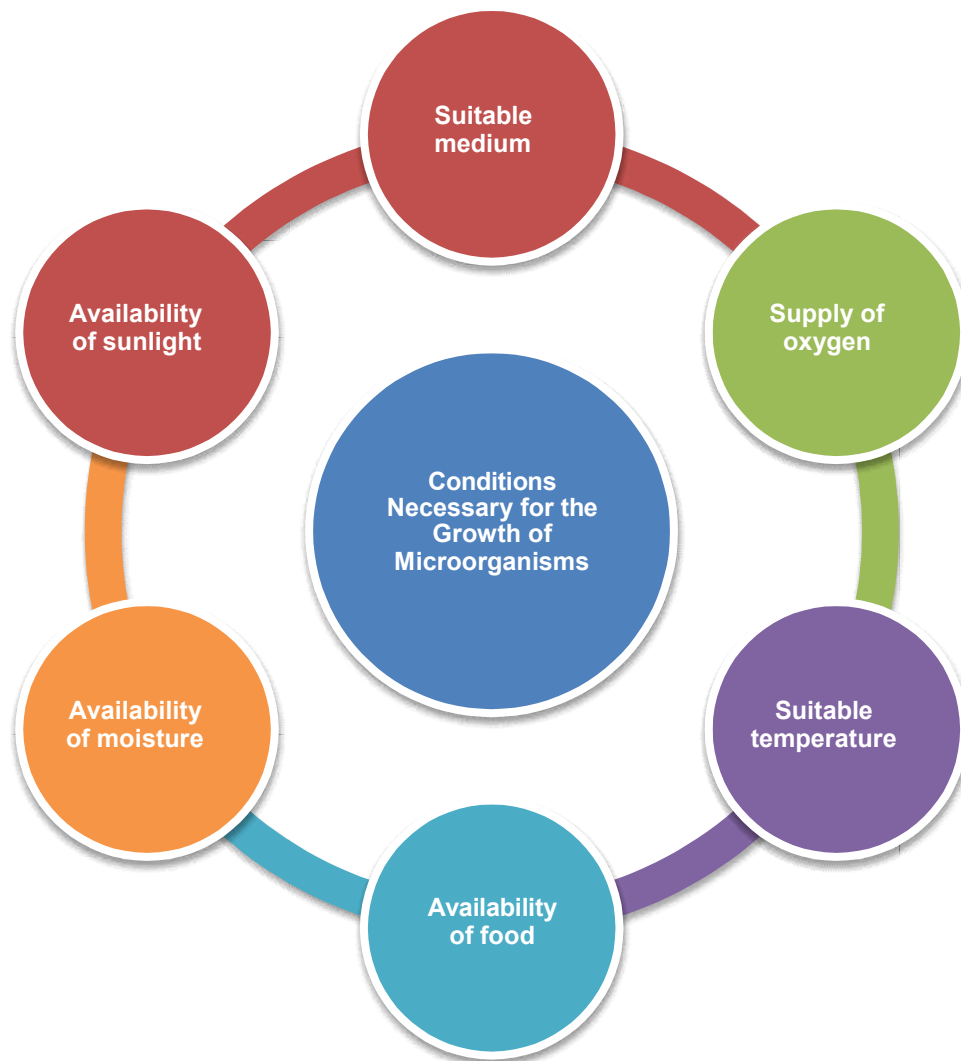
**Industrial Fixation** :- This is artificial fixation, atmosphere Nitrogen is made to combine With hydrogen to form ammonia in the factories.

ii. **Ammonification** :- The process of conversion of complex organic compounds (proteins into ammonia is called ammonification.

- iii. **NITRIFICATION** :- Conversion of ammonia into nitrites is called nitrification.
- iv. **Denitrification** : Conversion of nitrate salts into free nitrogen is called Denitrification. It is carried away by free-living denitrifying bacteria and free nitrogen is again released into the atmosphere.

**SEDIMENTATION** :- In natural ecosystem, some nitrogen may be derived from volcanic action or sedimentation

### Conditions Necessary for the Growth of Microorganisms





## Useful Microorganisms

### Increasing soil fertility

- Some bacteria and fungi act as decomposers and decompose dead and decaying matter and help in recycling nutrients back to the soil. eg rhizobium, Cyanobacteria

### Cleaning the environment

- Microorganisms decompose complex organic matter such as waste of vegetables, fruits, plants and animals, and convert them into simpler substances, thereby cleaning the environment. Eg watermoulds, Pseudomonas.

### Retting of fibres

- Some bacteria carry out the process of loosening of fibres of plants by rotting, also called retting. Eg Clostridium, Pseudomonas.

### Tanning of leather

- During tanning, the bacteria attack the skin of animals. The protein structure of the skin undergoes a permanent alteration. This makes them soft and pliable and the skin is converted into leather. Eg E.coli, Aspergillus.

### Food industry

- Yeast helps in the commercial production of beer, wine and other alcoholic drinks by fermenting fruit juices, malted grains or molasses.
- Yeast is often used in the baking industry for making breads, pastries and cakes.
- Bacteria find application in the making of curd. Eg Lactobacillus.
- Algae are a rich source of wholesome and nutritious food. Eg Chlorella, Spirulina.

### Production of antibiotics

- Antibiotics are manufactured by growing specific microorganisms to treat a wide variety of diseases caused by pathogenic microorganisms. Eg, Penicillium, Streptomyces.

### Production of vaccines

- Vaccines are made on a large scale from microorganisms to protect human beings and other animals from several diseases. Eg, Salmonella, Shigella, Vibrio.

- The first antibiotic penicillin was discovered by Alexander Fleming in 1929.
- Fungus *Penicillium notatum* produces penicillin.

### Some Important Vaccines



### Harmful Microorganisms

- Pathogens can successfully cause disease due to the following factors:
  - a. Ability to multiply fast.
  - b. Ability to destroy tissues of the body of other organisms.
  - c. Ability to produce toxins which affect certain organs of the host.

### Communicable Diseases

- Microbial diseases which can spread from an infected person to a healthy person through air, water, food, physical contact or through vectors are called **communicable diseases**. Examples: Tuberculosis, chickenpox.
- The insects or other animals which transmit disease causing microorganisms to humans without themselves getting infected are called **carriers**. Examples: Housefly, mosquito.

#### Important discoveries

Alexander Fleming: Discovered penicillin in 1929  
 Louis Pasteur: Discovered fermentation in 1857  
 Edward Jenner: Discovered vaccine for smallpox in 1798  
 Robert Koch: Discovered bacterium *Bacillus anthracis* in 1876

### Prevention of Communicable Diseases

Mouth and nose should be covered with a handkerchief while sneezing or coughing.

Uncovered roadside foods should not be consumed.

Food should be kept covered to protect it from getting infected by flies.

We should protect ourselves from mosquito bites by using mosquito nets or applying mosquito repellent creams.

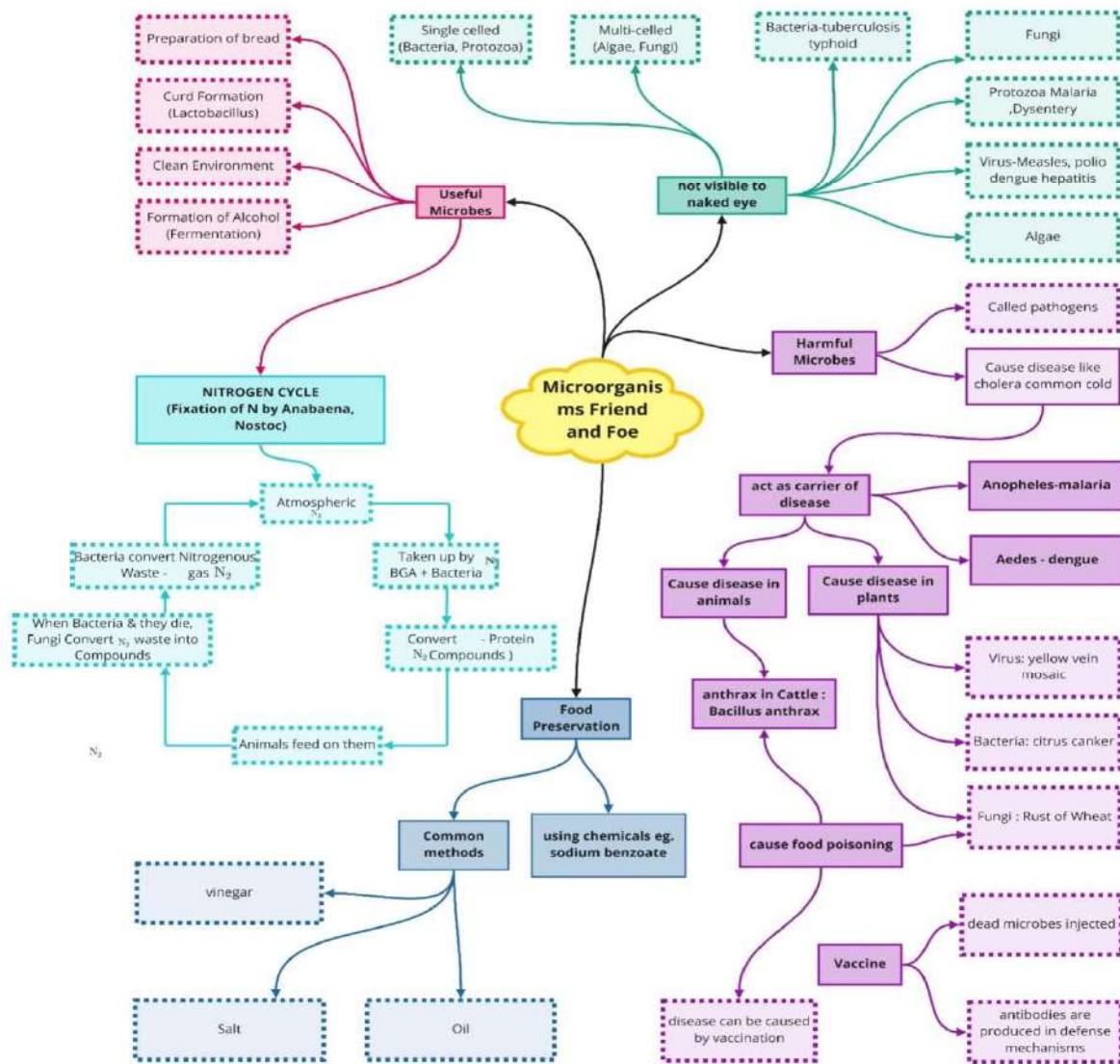
Only boiled water must be consumed.

One must avoid sharing towels and combs.

There should not be stagnant water or open garbage dumps in the locality.

# Food Poisoning

- Spoilage of food by the action of microorganisms is called **food poisoning**.
- It mostly occurs due to consumption of food spoilt by fungi and bacteria.
- When these organisms come in contact with food, they decompose it and release chemical toxins. This contaminates or spoils food.



## Multiple Choice Questions-

**Question 1.** The host for malaria causing protozoan is:

- (a) anopheles mosquito      (b) the cow      (c) the earthworm      (d) the tapeworm

**Question 2.** The bread or dosa dough rises because of the action of:

- (a) heat      (b) grinding      (c) growth of yeast cells      (d) none of these

**Question 3.** Malaria is spread by:

- (a) plasmodium      (b) female anopheles mosquito      (c) male anopheles mosquito  
(d) none of these

**Question 4.** Protozoan shaped like a slipper is:

- (a) amoeba      (b) paramecium      (c) euglena      (d) entamoeba

**Question 5.** The bacterium that turns milk into curd is:

- (a) lactobacillus      (b) acetobacter      (c) rhizobium      (d) none of these

**Question 6.** The bacteria was first observed by:

- (a) Louis Pasteur      (b) Antony Von Leuwen Hook      (c) Robert Hooke      (d) Robert Koch

**Question 7.** Virus reproduce:

- (a) only outside the cells of the host organisms  
(b) only inside the cells of the host organisms  
(c) both inside and outside the cells of the host organisms  
(d) none of these

**Question 8.** Which of the following lives alone:

- (a) amoeba      (b) fungi      (c) bacteria      (d) all of these

**Question 9.** The process of conversion of sugar into alcohol is known as:

- (a) pasteurization      (b) fermentation      (c) decomposition      (d) none of these

**Question 10.** In Pasteurisation the milk is heated to about:

- (a) 100°C      (b) 50°C      (c) 70°C      (d) 110°C

**Question 12.** The bacterium living in the root nodules of leguminous plants is:

- (a) lactobacillus                      (b) acetobactor                      (c) rhizobium                      (d) none of these

**Question 13.** Atmospheric nitrogen is used for the synthesis of:

- (a) plant proteins                      (b) animal proteins                      (c) plant carbohydrates                      (d) none of these

**Question 14.** The percentage of nitrogen in the atmosphere:

- (a) increases during day time                      (b) decreases during day time  
(c) remains more or less constant                      (d) can't say

**Question 15.** Which of the following is a preservative:

- (a) sodium benzoate                      (b) common salt                      (c) vinegar                      (d) all of these

**Question 16.** Hepatitis-A is transmitted through:

- (a) water                      (b) air                      (c) food                      (d) contact

**Question 17.** Communicable diseases are spread from an infected person to a healthy person through:

- (a) air                      (b) water                      (c) food                      (d) all of these

**Question 18.** A group of micro organisms that have the characters of both living and non-living are:

- (a) bacteria                      (b) protozoa                      (c) virus                      (d) fungi

**Question 19.** is the process by which alcohol and  $\text{CO}_2$  are produced by yeast cells.

- (a) respiration                      (b) digestion                      (c) evaporation                      (d) fermentation

**Question 20.** Cause of malaria is:

- (a) fungi                      (b) bacteria                      (c) protozoa                      (d) virus

**Question 21.** The algae commonly used as fertilisers are called:

- (a) chlorellin                      (b) blue-green algae                      (c) spirogyra                      (d) none of these

**Question 22.** Which of the following drug is an antibiotic?

- (a) alcohol                      (b) streptomycin                      (c) insulin                      (d) none of these

**Question 23.** Leprosy is caused by:

- (a) bacteria                      (b) virus                      (c) protozoa                      (d) fungi

**Question 24.** The cause of whooping cough is

- (a) bacteria      (b) virus      (c) fungi      (d) algae

**Question 25.** Virus is.

- (a) non-living      (b) living as well as non-living      (c) living      (d) none of these

**Question 26.** Tuberculosis is a disease caused by:

- (a) bacterium      (b) protozoan      (c) virus      (d) malnutrition

**Question 27.** BCG vaccine is used to curb:

- (a) cholera      (b) tuberculosis      (c) polio      (d) typhoid

**Question 28.** Cholera is due to:

- (a) virus      (b) fungus      (c) protozoan      (d) bacterium

**Question 29.** Which of the following is air-borne disease:

- (a) typhoid      (b) tuberculosis      (c) cholera      (d) polio

**Question 30.** Breathing in polluted air causes:

- (a) kidney trouble      (b) heart problem      (c) respiratory diseases      (d) none of these

**Question 31.** Yeast helps in the production of:

- (a) sugar      (b) alcohol      (c) oxygen      (d) none of these

### Very Short :

1. Name the five groups of microorganisms.
2. Name any two serious diseases caused by virus.
3. Name any two diseases caused by protozoa.
4. Name any two domestic uses of microorganisms.
5. Which bacteria promotes the formation of curd?
6. Name the bacteria used in making bread, pastries and cakes.
7. Name the commercial use of yeast.
8. Name the scientist who discovered penicillin.
9. Name any two communicable diseases.
10. Name any two carriers of diseases.
11. Name any two food preservatives.



12. Name the nitrogen fixation bacteria.
13. Who discovered pasteurisation?
14. Why milk is boiled before storage and consuming?

### Short Questions :

1. What are microorganisms?
2. Define virus.
3. Why are viruses different from other microorganisms?
4. Where are microorganisms found?
5. How do microorganisms help in agriculture?
6. What is fermentation?
7. Why is yeast used in the baking industry for making bread, cakes and pastries?
8. What are antibodies?
9. What are communicable diseases?
10. Name the modes of transmission of communicable disease.

## ANSWER

### MCQ:

1. Anopheles mosquito: Anopheles mosquito is the host for malaria causing protozoan
2. Growth of yeast cells: Due to growth of yeast cells, the breads or dosa dough rises
3. Female anopheles mosquito: Malaria is spread by female anopheles mosquito.
4. Paramecium: Protozoan shaped like a slipper is paramecium.
5. Lactobacillus: Lactobacillus turns milk into curd.
6. Antony Von Leuwen Hook: The bacteria was first observed by Antony Von Leuwen Hook.
7. Only inside the cells of the host organisms: Virus reproduce only inside the cells of the host organisms.
8. Amoeba: Amoeba lives alone whereas fungi and bacteria live in colonies.
9. Fermentation: Fermentation is the process of conversion of sugar into alcohol.
10. 70°C: In pasteurisation the milk is heated to about 70°C for 15 to 30 seconds and then suddenly chilled and stored.
11. Rhizobium: The bacterium living in the root nodules of leguminous plants is Rhizobium.
12. Plant proteins: Atmospheric nitrogen is used for the synthesis of plant proteins
13. Remains more or less constant: The percentage of nitrogen in the atmosphere remains more or less constant.

14. All of these: Sodium benzoate, common salt and vinegar are all preservatives.
15. Water: Hepatitis-A is transmitted through water.
16. Water: Communicable diseases are spread from an infected person to a healthy person through air, water, food and physical contact.
17. Virus: Virus have the characters of both living and non-living.
18. Respiration: Respiration is the process by which alcohol and  $\text{CO}_2$  are produced by yeast cells.
19. Protozoa: Protozoa called plasmodium is the cause of malaria.
20. Blue-green algae: Blue-green algae are used as fertilisers because they can fix atmospheric nitrogen to usable compounds which help in crop growth and improves the water holding capacity of soil.
21. Streptomycin: Streptomycin drug is an antibiotic
22. Bacteria: Bacteria causes leprosy.
23. Bacteria: Bacteria is cause of whooping cough.
24. Living as well as non-living: Virus is living as well as non-living.
25. Bacterium: Tuberculosis is caused by bacterium.
26. Tuberculosis: BCG vaccine is used to curb tuberculosis.
27. Bacterium: Bacterium causes cholera.
28. Cholera: Tuberculosis is an air-borne disease.
29. Respiratory diseases: Breathing in polluted air causes respiratory diseases.
30. Alcohol: Yeast helps in the production of alcohol.

### Very Short-

1. **Ans:** Five groups of microorganisms are bacteria, fungi, protozoa, algae and virus.
2. **Ans:** Polio and chickenpox are caused by viruses.
3. **Ans:** Dysentery and malaria are caused by protozoa.
4. **Ans:** Two domestic uses of microorganisms are as follows:  
Setting of curd, Fermentation of idlis.
5. **Ans:** Lactobacillus promotes the formation of curd.
6. **Ans:** Yeast is used in making bread, pastries and cakes.
7. **Ans:** Yeast is used in the production of alcohol and wine.
8. **Ans:** Alexander Fleming discovered penicillin.

9. **Ans:** Cholera and common cold.
10. **Ans:** Two common carriers of diseases are mosquitoes and houseflies.
11. **Ans:** Two food preservatives are sugar and vinegar.
12. **Ans:** Rhizobium is the nitrogen fixation bacteria.
13. **Ans:** Louis Pasteur.
14. **Ans:** Milk is boiled to prevent spoilage due to development of microorganisms.

### Short Answer-

1. **Ans:** Extremely small living organisms that cannot be seen by naked eye are called microorganisms. They may be unicellular or single-celled or multicellular.
2. **Ans:** Viruses are tiny transferable agents that act as non-living outside host cells and act living inside host cells and show reproduction. Viruses can affect all kinds of organisms including animals, plants and bacteria.
3. **Ans:** Viruses are also tiny but are different from other microorganisms as they show reproduction. They reproduce inside the host cell which may be a bacterium, plant or animal.
4. **Ans:** Microorganisms are found in all kinds of environments, ranging from ice cold climate to hot springs; and deserts to marshy lands. They are also found inside the bodies of animals and humans. Some microorganisms grow on other organisms while others exist freely.
5. **Ans:** Microorganisms increase the soil fertility by combining the air, nitrogenous compounds and minerals. Bacteria like Rhizobium and blue green algae are microorganisms which can fix atmospheric nitrogen in the soil and increase soil fertility, which helps in agriculture.
6. **Ans:** Fermentation is the process in which conversion of sugar into alcohol takes place through the action of enzymes.
7. **Ans:** Yeast reproduces quickly and produces carbon dioxide during respiration. Yeast makes breads, cakes and pastries soft and spongy. This is the basis of using yeast in the baking industry.
8. **Ans:** An antibody is a protein released by the body's immune system in response to the microbes carrying diseases in our body. Antibody provides the strength to fight against the disease-causing microbe. Antibodies protect our body against infectious diseases.
9. **Ans:** Infectious diseases that can spread from an infected person to a healthy person through mediums like air, water, food or physical contact are known as communicable diseases. Examples of communicable diseases are cholera, common cold, chicken pox and tuberculosis.

10. **Ans:** The modes of transmission of communicable diseases can be direct and indirect. In direct transmission diseases can be spread by direct contact, by droplet infection, sharing infected needles, syringes and razors, infected blood transfusion. In indirect transmission diseases can be spread by infected food, water or air, through carriers like the housefly, mosquitoes, and rats or through dirty hands.

### TEXTUAL QUESTIONS

Q.1 Fill in the blanks

- Microorganisms can be seen with the help of a microscope
- Blue green algae fix nitrogen directly from air to enhance fertility of soil
- Alcohol is produced with the help of microorganisms
- Cholera is caused by bacteria

Q2. Tick the correct answer:

a) Yeast is used in the production of

- Sugar
- Alcohol
- Hydrochloric acid
- Oxygen

Ans Alcohol

b) The following is an antibiotic

- Sodium bicarbonate
- Streptomycin
- Alcohol
- Yeast

Ans Streptomycin

c) Carriers of malaria-causing protozoan is

- Female Anopheles mosquito
- Cockroach
- Housefly
- Butterfly

Ans Female Anopheles mosquito

d) The most common carries of communicable diseases is

- Ant
- Housefly
- Dragonfly
- Spider

Ans Housefly

e) The bread or idli dough rises because of

- Heat
- Grinding
- Growth of yeast cells
- Kneading

Ans Growth of yeast cells

f) The process of conversion of sugar into alcohol is called

- Nitrogen fixation
- Moulding
- Fermentation
- Infection

Ans Fermentation

Q3. Match the organisms in column I with their action in column II

Column I

Column II

Bacteria

Causing cholera

Rhizobium

Fixing Nitrogen

Lactobacillus

Setting of curd

Yeast

Baking of bread

A protozoan

Causing Malaria

A virus

Causing AIDS

Q4. Can microorganisms be seen the naked eye? If not, how can they be seen?

Ans Millions of organisms are present around us. They are so small and cannot be viewed with our naked eyes and can only be seen under a microscope. These are called microorganisms or microbes e.g bacteria and viruses. Micro organism live almost everywhere in the air, water, soil and even inside other organisms. Many live within our body. Some of them are useful while others are harmful and cause diseases in other living organisms.

The size of a micro-organism is usually measured in microns (1 micron ( ) =  $10^{-6}m$ )

Microbes are so small that several million can fit on a pin head.

Q5. What are the major groups of micro-organisms?

Ans Micro-organisms are classified into five major groups. These groups are

1. Bacteria (Bacterium)
2. Viruses (Virus)
3. Protozoa (Protozoan)
4. Fungi (Fungus)
5. Algae (Alga)

Micro-organisms may be unicellular (single-celled) or multi-cellular (many celled).

1. Bacteria:

Bacteria are very small, single-celled micro-organisms which have cell walls but do not have an organized nucleus and other structures. Bacteria are found in large numbers everywhere: in air; soil and water; every surface around us; on our bodies and even inside our bodies. Bacteria are larger than viruses but still very small. Unlike viruses, bacteria feed, move and respire, as well as reproduce on their own. There are mainly three groups of bacteria on the basis of their shape:

- a) Spherical bacteria    b) Rod shaped bacteria    c) Spiral bacteria

The two common examples of bacteria are lactobacillus bacteria and Rhizobium bacteria.

Some of the bacteria are useful and help in making foods (like curd), nitrogen fixation etc.

On the other hand, some of the bacteria cause diseases like cholera, typhoid, food poisoning etc.

2. Viruses:

Viruses are the smallest micro-organisms which can develop only inside the cells of the

host organisms (which may be animal, plant or bacterium). Viruses are much smaller than bacteria. Viruses do not show most of the characteristics of living things e.g they do not respire, feed, grow, excrete or move on their own. They just reproduce. Viruses can reproduce and multiply only inside the cells of other organisms (such as animal cells, plant cells or bacteria cells). Viruses are the agents of disease. The human diseases such as common cold, influenza (flu), measles, polio, chickenpox etc are all caused by viruses. The two examples of viruses are 'common cold virus' and 'Human Immunodeficiency Virus' (HIV).

### 3. Protozoa:

Protozoa are a group of single-celled micro-organisms which are classified as animals.

Protozoa are animal like just as algae are plant like. Protozoa are found in ponds, lakes,

dirty water, drains etc. Some common examples of protozoa are Amoeba, Paramecium,

Entamoeba etc. Diseases like dysentery and malaria are caused by protozoa.

### 4. Algae:

Algae is a large group of simple plant like organisms. They contain chlorophyll and produce food by photosynthesis just like plants. Algae, however differ from plants because they do not have proper roots, stems and leaves. Some of the examples of algae are chlamydomonas, spirogyra. Only some algae are unicellular. Most of the algae are multicellular.

### 5. Fungi:

Fungi are a large group of organisms which do not have chlorophyll and do not photosynthesise. Some examples of fungi are: Yeast, Moulds, Mushrooms etc. All fungi (except yeast) are made up of fine threads called hyphae. Some of the human diseases caused by fungi are ringworm and athlete's foot.

Q6. Name the microorganisms which can fix atmospheric nitrogen in the soil?

Ans Bacteria such as rhizobium and certain blue green algae present in the soil can fix atmospheric nitrogen and convert into usable nitrogenous compounds, which are used by plants for the synthesis of plant proteins and other compounds.

Q7. Write 10 lines on the usefulness of micro-organisms in our lives?

Ans Micro-organisms are too small to be seen through naked eyes. However, they are vital to plants and the environment. Some of the usefulness of micro-organisms in our lives are listed below:

1. Milk is turned into curd by bacteria. Curd contains several micro-organisms including lactobacillus bacterium. Lactobacilli bacteria promote the formation of curd from milk.

2. Rhizobium present in the roots of pulse plants fix nitrogen from air and supply nitrogen compounds to the pulse plants.

3. Micro-organisms are also used in wine making, baking, pickling and other food making processes.

4. Alcoholic fermentation by yeast is widely used in the preparation of wine and bread.

5. Microbes are used to reduce pollution. For example, decomposers such as bacteria and fungi break down dead bodies and excreta to form inorganic compounds, which can be absorbed by plants.

6. Microbes also play an important role in the preparation of medicines. Antibiotics are chemicals produced by micro-organisms to kill bacteria. Penicillin is an antibiotic made from penicilium.

7. Bacteria present in our intestine helps in proper digestion and release vitamin B which is absorbed by intestine.



8. Many vaccines are prepared from micro-organisms. These vaccines are given to children to protect them from disease.
9. Certain microbes are also used in biological treatment of sewage and industrial effluents.
10. Yeast is used in making idlis, bread, pastries and cakes.

Q8. Write a short paragraph on the harms caused by micro-organisms?

Ans Micro-organisms can be harmful in many ways. For example, some of the micro-organisms cause diseases in human beings, other animals and plants. Those micro-organisms which cause disease are called pathogens. Thus, pathogens are disease-causing micro-organisms. Pathogens can be bacteria, viruses, protozoa or fungi etc. Micro-organisms cause diseases such as tuberculosis (TB), tetanus, diptheria, whooping cough, cholera, typhoid, AIDS, food poisoning, malaria, small pox and chickenpox, etc. Some micro-organisms spoil food, clothing and leather objects.

Several micro-organisms cause diseases in plants like wheat, rice, potato, sugarcane, orange, apple and others. The diseases reduce the yield of crops. Some plant diseases caused by micro-organisms include black rot of cabbage, late blight of potato, white rust of mustard etc.

Q9. What are antibiotics? What precautions must be taken while taking antibiotics?

Ans A medicine which stops the growth of, or kills the disease-causing micro-organisms is called an antibiotic. The source of antibiotic medicines are micro-organisms. Some of the common antibiotics which are made from fungi and bacteria are: Pencillin, streptomycin, tetracycline etc. Antibiotics are used to treat many diseases in humans. Antibiotics are, however, not effective against diseases caused by viruses.

Some of the precautions to be observed in the use of antibiotics are as follows:

1. Antibiotics should be taken only on the advice of a qualified doctor.
2. A person must complete the 'full course' of antibiotics prescribed by the doctor.
3. The antibiotics should be taken in proper doses as advised by the doctor.
4. Antibiotics should not be taken unnecessarily. Antibiotics taken unnecessarily may kill the useful bacteria in the body and harm us.

**Activity:** To observe specimens of various slides of micro-organisms.

# CIVICS

## Chapter 1: The Indian Constitution



**8th**

## The Indian Constitution

### Our Constitution

We follow rules in almost everything we do. There are certain rules in a family as to when people wake up, Have their meals and sleep. There are rules in a school. There are rules that people follow in gyms, while playing games and while driving. Rules are made (and followed) so that people can live and work together in a smooth and systematic way. Without rules, life would disintegrate into chaos.

A 'nation' or 'State' is governed by rules laid down by its constitution. Before we discuss what a constitution is and why it is necessary, let us understand what we mean by the term State. In the context of a country, the word 'state' can mean one of the many parts it is divided into, such as the states of India or the USA. 'State' (written with a capital 'S'), on the other hand, refers to a nation as a political entity (unit). Though 'State' and 'government' are often used interchangeably, there is a difference between the two terms. The government of a country max- change periodically, but the State continues to exist. For example, there have been several changes in government since the State of India was formed in 1947.



In 2011, Libya plunged into a civil war, with the people protesting against the dictatorship of Muammar Gaddafi.

The UN and some European countries got involved in the armed struggle to establish a democratic government

### WHAT IS A CONSTITUTION

The rules and principles (ideals) on the basis of which a country is governed is called its constitution. Almost every country has a constitution for the following reasons.

- A constitution defines the type of government or political system a country has. Different countries have different systems. There are monarchies, in which the king is the Centre of power. There are democracies, in which the people are the source of power. There are dictatorships, in which a leader (for example, the head of the military) is the most powerful.



In 2006, widespread protests forced king Gyanendra of Nepal to step down and concede to the people's demand for a democratic government

Q. Surf the Net to find out how far the people of Nepal have succeeded in bringing back peace and setting up a democratic government.

- A constitution describes the principles along which a country is to be governed. The laws that are made in a country must abide by these principles or follow the spirit of its constitution. This serves as an important protection against the danger of a group of people rising to power and making laws to change the basic structure of the State.
- A constitution lays down the powers of the different organs of the government and provides measures so that these powers may not be misused.
- It sets out the rights that the people enjoy and provides measures for safeguarding (protecting) these rights. That means it spells out the steps that an individual or a group may take if their rights are taken away by others, including the State.



## THE PREAMBLE

The Preamble is the introductory part of the Constitution. It sets out the ideals that the makers of the Constitution (as representatives of the people) wished the country to follow. It is the guiding spirit behind all the laws in the country.

**The People:** The Preamble says, "We the people of India? Adopt, enact and give to ourselves this Constitution." This means the people are all- important. They are the ultimate source of power, in keeping with the spirit of democracy.

**Sovereign:** 'Sovereign' in this context means independent.

**Socialist:** 'Socialism' refers to certain political principles that have been interpreted differently in different countries. Indian socialism lays stress on striving towards a 'more equal' society by



'helping' the weaker sections. We will discuss this in greater detail under social justice.

### Know a Little More

In a strictly socialist State, the means of production (farms, factories, etc.) are owned by the people. There is no, or very little, private ownership of wealth. This was the case in the former Soviet Union. In India, the State does own or run the railways, the postal system, some banks, and industrial units, but there is private ownership as well.

The term 'socialist' was added to the Preamble by an amendment to the Constitution in 1976. 'Amendment' means change. Our Constitution can be amended to suit the changing needs of the people. However, amendments can be made only in accordance with the procedure laid down by the Constitution. This is a protective measure so that people cannot change the Constitution in such a way as to harm the country

**Secular:** India is a secular State. This means the State keeps away from religious matters. The word 'secular', too, was added to the Constitution in 1976 by an amendment, as was the phrase 'unity and integrity of the nation'.

**Democratic:** In a democracy, it is the people who govern the country through their elected representatives. These representatives govern as long as the people have faith in them and may be changed during elections, which are held at regular intervals.

**Republic:** In a republic, the State is headed by an elected representative and not a hereditary ruler (king). The head of the State of India is an elected representative.

**Justice:** To be 'just' means to be fair, impartial, and morally correct. When we speak of justice in the context of law, we mean that laws apply equally to everyone, irrespective of religion, caste, sex, social status, etc.

**Social and economic justice:** This means trying to reduce the inequalities in the wealth and social status of the people. Our Constitution provides reservation of a certain percentage of seats (or posts) in educational institutions, government jobs, etc. for members of the



The picture shows protests held in 2006 against the

Government's decision to reserve 27% of seats in prestigious academic institutions for OBCs. The protesters felt that the decision was discriminatory (unfair) since it would reduce the number of seats available for students from the non-reserved category.

Scheduled Castes (SCs), Scheduled Tribes (STs) and Other Backward Classes (OBCs). The idea is to give these people, who had been deprived of opportunities earlier, a fairer chance to catch up with the rest of the society.

## KEY FEATURES OF THE CONSTITUTION

We will discuss the basic features of our Constitution and try to understand how they reflect the aspirations of the people and suit their needs.

### Federal system

Under the federal system, a country is formed of the 'union' of several states, which have a certain degree of independence in conducting their own affairs. However, the overall responsibility of governing the country lies with the central government or union government. How much independence the states have, varies from country to country.

The makers of the Constitution thought that this system would suit our country because our country has so many communities, each with its own aspirations and needs. Thus, we have a Central government which looks after matters of national importance (for example defense and relations with other countries and state governments which take care of the needs of the states. The Constitution lists the areas in which only the union government can make laws (Union List), the areas in which the state governments can make laws (State List), and the areas in which both the union and state governments can make laws (Concurrent List). It also mentions the sources (through taxes, for example) from which the Centre and the states can get money to carry out their responsibilities.

### Know a Little More

The 50 stars in the US flag represent the 50 states that form the United States of America. Each of the American states has its own laws (constitution) and Supreme Court. This is not the case in India.



### Separation of Powers

The Indian State has three organs-the legislatures, the executive and the judiciary. The legislature (Parliament) frames laws, the executive (ministers) implements laws and the



judiciary (courts) interprets laws. The executive is answerable to the legislature, which consists of elected representatives. The judiciary is independent of the executive and the legislature and can question their actions, including the passing of laws by Parliament. The powers of the State are thus divided in such a way among the three organs as to provide a system of checks and balances to prevent the misuse of power by any organ.

### **Parliamentary form of government**

In the parliamentary form of democracy, the executive and the legislature are linked together, the executive being answerable to the legislature. Also, the executive is not elected by the people. This is not so in the presidential form of democracy (followed in the USA, for example), in which the people elect the executive (President) separately from the legislature and the two organs function independently.

Parliamentary democracy can be of many types. In India, the legislature has two houses and the elected representatives are chosen by universal adult suffrage. This means every adult citizen has the right to vote, irrespective of religion, sex, education, wealth, etc. Also, each citizen's vote has the same weight age irrespective of his/her status in society. In our form of parliamentary democracy, the head of the State (President) is different from the head of the government (Prime Minister).

### **Fundamental Rights**

The Constitution guarantees the following rights, called the Fundamental Rights, to all citizens. These rights cannot be taken away by anyone (including the State), except by the 'due process of law', or according to the law. For example, the right to personal liberty can be taken away if a person is convicted of a crime and the relevant court awards a sentence (punishment) of imprisonment.

### **Know a Little More**

After the Second World War, there was a worldwide movement to declare certain rights 'universal', that is, belonging to all mankind. It led to the adoption of the Universal Declaration of Human Rights (UDHR) by the United Nations. It was an effort to prevent States from taking away the basic rights of their citizens. The National Human Rights Commission investigates cases of human rights violation in the country.

**Right to equality:** Under our Constitution, even" Indian is equal in matters of rights, opportunities and protection under the law. Any kind of discrimination on grounds of religion, caste, wealth, sex, language, etc., is prohibited. For example, no one can be prevented from holding a job, entering a public place or studying in an institution on these grounds. The practice of untouchability (see Chapter 7) is banned. The use of titles (like Rai Bahadur) is banned. Even titles such as Bharat Ratna that are awarded by the State, for service to the nation, cannot be used before one's name.

The right to equality does not mean that the State cannot make special concessions for the

weaker sections of society. The State has made special provisions for women, the disabled and the elderly, for example, women pay less tax than men.

Right to freedom: Other than the right to life and personal liberty, the Constitution gives us the following freedoms:

- Freedom of speech and expression
- Freedom to assemble peacefully and without arms
- Freedom to form associations and unions
- Freedom to move freely throughout the country
- Freedom to reside and settle in any part of the country
- Freedom to practice any profession or to carry on any occupation, trade or business

However, there are certain conditions attached to these freedoms. For example, freedom of speech and expression does not mean that we can say (in public) or write (publish) things that are harmful to others or a threat to the integrity of the nation.

Right to freedom of religion: Every citizen has the right to practice, preach and profess a religion of his or her choice. We will discuss this in greater detail in the chapter on secularism.

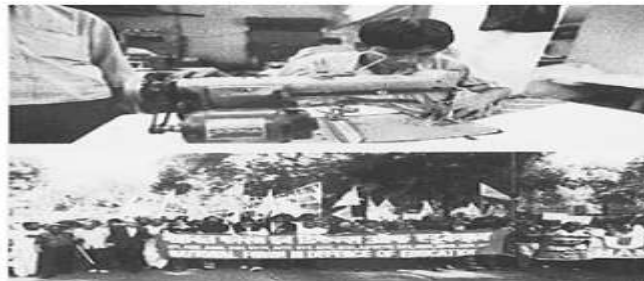
Cultural and educational rights: Every cultural group is at liberty to take measures to preserve and promote its traditions (language, literature, folk art, etc.). Minority groups have the right to set up educational institutions.

Right against exploitation: To exploit' means to take advantage of. The right against exploitation seeks to protect women, children and the weaker sections of society from being exploited by others. For example, it is illegal to employ children under 14 in any job and to make people work without wages to repay loans. The latter is known as bonded labor or begari.

Right to constitutional remedies: Every citizen has the right to appeal to a court if he or she is deprived of his or her Fundamental Rights by anyone, including the State.

Right to primary education: Children in the age group of 6 to 14 have the right to receive free primary education. This law was passed in 2009.

To which rights are these pictures related?



### Directive Principles of State Policy

Everything that a new nation aspires to cannot be achieved at once, primarily because of the lack of resources. This was the case with India too, so the framers of the Constitution laid

down some guidelines or goals for the future. These are called the Directive Principles of State Policy. Many of these principles have been converted into laws over the years. For example, laws have been passed on the right to primary education, on the protection of the environment and on the protection of monuments. Once a Directive Principle becomes a law, it can be enforced by a court of law.

### **Fundamental Duties**

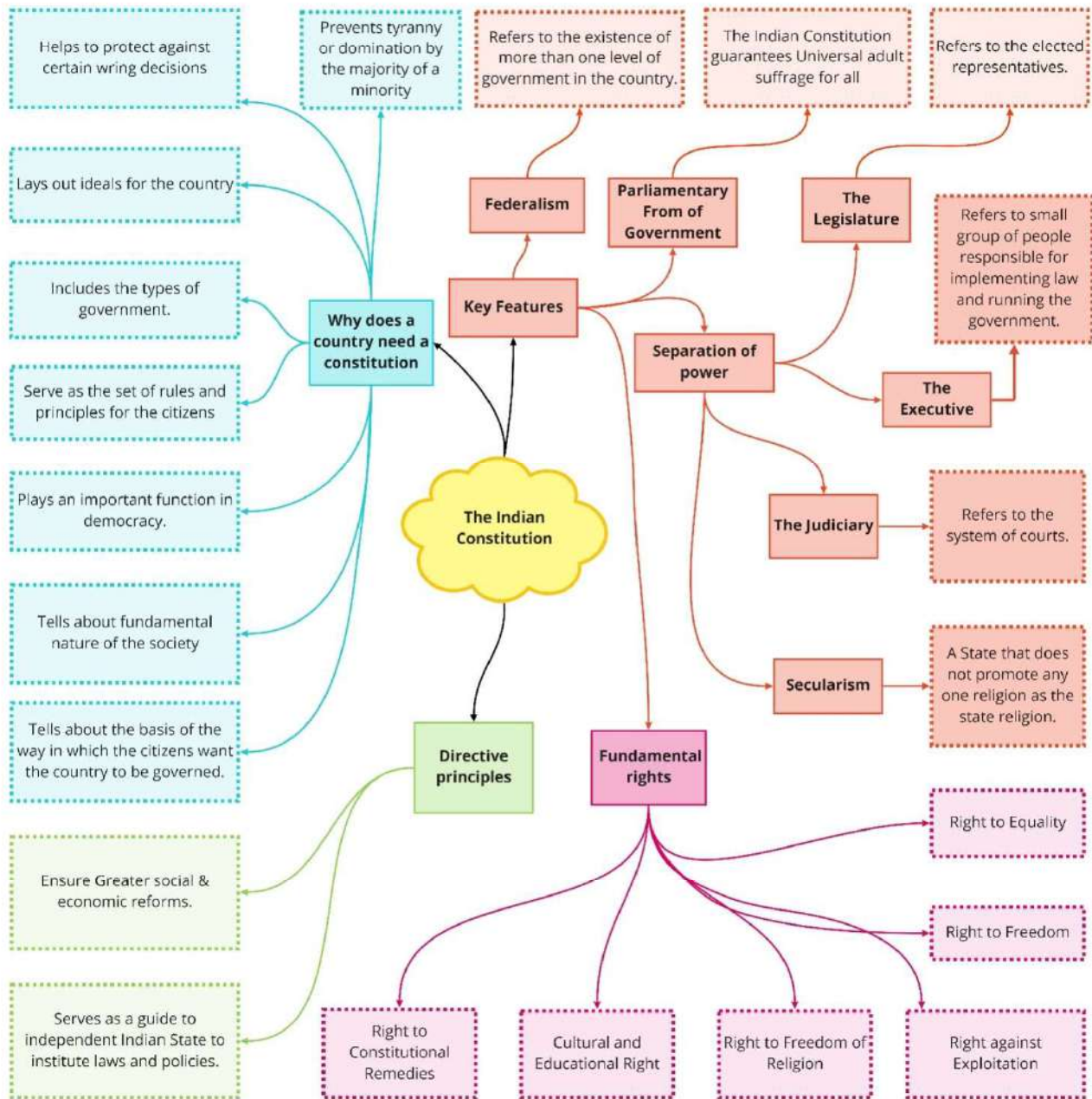
These duties of a citizen were added to the Constitution by the 42nd Amendment Act in 1976. These cannot be enforced by law. Some of these duties are:

- To abide by the Constitution and respect its ideals, the national flag and the national anthem
- To cherish and follow the noble ideals of the freedom struggle
- To uphold and protect the sovereignty, unity and integrity of India
- To defend the country and render national service when required
- To promote harmony and the spirit of brotherhood among all Indians
- To value and preserve the heritage of our composite culture
- To protect and improve the natural environment

### **Know a Little More**

Do you know about the Flag Code of India? Among other things, it describes the procedures to be followed while handling our national flag. This code was last amended in 2002.

Class : 8th Social Science Political  
Chapter 1 The Indian Constitution



## Important Questions

### Multiple Choice Questions-

Question 1. Which part of the Indian Constitution has been referred to as the 'Conscience'.

- (a) Secularism    b. D.P.S.P    c. Fundamental Rights    d. Fundamental Duties

Question 2. Which is the 3rd tier of government?

- (a) Panchayati Raj    b. Municipal corporation    c. State government    d. Central government

Question 3. When did Indian National Congress (INC) make the demand for a Constituent Assembly?

- (a) 1934    b. 1945    c. 1946    d. 1947

Question 4. When did the Maoists join other political parties in Nepal to sign a 12-point agreement?

- (a) April 2006    b. October 2007    c. Nov 2005    d. Feb 2005

Question 5. The Constitution prohibits human trafficking, forced labour, and children working under 14 years of age. It is mentioned under which Fundamental Right?

- (a) Right to Freedom    b. Right to Freedom of Religion  
(c) Right to Constitutional Remedies    d. Right against Exploitation

Question 6. Which court issue the Writs?

- (a) District Courts    b. Panchayats    c. Civil Courts/Criminal Courts    d. Supreme Court/High Courts

Question 7. Panchayati Raj is the tier of which government?

- (a) First    b. Second    c. Third    d. Fourth

Question 8. When did our Constitution was adopted and was enforced?

- (a) 26 January 1950    b. 15 August 1947    c. 2 October 1950    d. 26 November, 1949

Question 9. According to which set of fundamental rules the country functions.

- (a) A law    b. An amendment    c. A constitution    d. A preamble

Question 10. By which amendment the Fundamental duties were included in the Constitution?

- (a) 38<sup>th</sup> Amendment    b. 42<sup>nd</sup> Amendment    c. 40<sup>th</sup> Amendment    d. 39<sup>th</sup> Amendment

Question 11. What are the objectives for implementing the fundamental rights according to Dr. B.R. Ambedkar?

- (a) To ensure every citizen is benefited      b. To ensure every citizen is rich  
(c) To ensure every citizen has ration card      d. None of these

Question 12. What is the significance of the Preamble in the Indian Constitution?

- (a) States the objectives of the president      b. States the objectives of the election  
(c) States the objectives of the Constitution      d. None of these

Question 13. What is Sovereignty?

- (a) Freedom to establish new country      b. Freedom to govern oneself  
(c) People's government      d. None of these

Question 14. What is Democracy?

- (a) Rule of people      b. Rule of king      c. Rule of British      d. None of these

Question 15. What is a constitution?

- (a) Set of rules of court      b. Set of rules to govern country.  
C. Set of rules of company      d. None of these

### Answer Key:

#### MCQ:

1. (c) Fundamental Rights      2. (a) Panchayati Raj      3. (a) 1934      4. (c) Nov 2005  
5. (d) Right against Exploitation      6 (a) Supreme Court/High Courts      7. (c) Third  
8. (a) 26 January 1950      9. (c) A constitution      10. (b) 42<sup>nd</sup> Amendment  
11. (a) To ensure every citizen is benefited      12 (c) States the objectives of the  
Constitution      13. (b) Freedom to govern oneself      14 (a) Rule of people  
15. (b) Set of rules to govern country

#### **Very Short:**

1. In politics, what is a constitution?
2. In Nepal, when did the Interim Constitution come into effect?
3. What are the negative points of a democratic society?
4. What do you mean by federalism?      5. What is Right to Equality?
6. What is Right against Exploitation?



7. How has the section on Fundamental Rights often been referred to?
8. How are Fundamental Rights important? Give one point.
9. What does the word 'State' refer to?
10. What caused fear among the members of the Constituent Assembly?
11. What did the members of the Constituent Assembly do to come out of their fear?
12. What do you mean by a secular state?

### **Very Short Answer:**

1. In Politics a constitution can be described as a document outlining the basic laws or principles by which a country is to be governed.
2. In Nepal, the Interim Constitution came into effect from January 15, 2007.
3. In a democratic society Power can be misused. Sometimes the Majority can undermine the minority. The citizens need certain rules to save themselves from folly.
4. The term federalism refers to the existence of more than one level of government in the country.
5. Right to Equality means that all persons are equal before the law.
6. Under this Right the Constitution prohibits trafficking, forced labour and children working under 14 years of age.
7. It has often been referred to as the conscience of the Indian Constitution.
8. Fundamental Rights protect citizens against the arbitrary and absolute exercise of power by the state.
9. The word 'State' refers to a political institution that represents a sovereign people who occupy a definite territory. For example, the Indian State.
10. They feared that the executive might become too strong and ignore its responsibility to the legislature.
11. They included several provisions in the Constitution to limit and control the actions taken by the executive branch of government as a whole.
12. A secular state does not officially promote any one religion as the state religion.

### **Short Questions:**

1. How can a leader misuse power in a democratic country?
2. Differentiate between a monarchy and a democracy?
3. How does the Indian Constitution safeguard the minorities of the country?

4. What will happen if there is no restriction to the powers of elected representatives?
5. What is universal adult franchise?
6. What do you mean by the legislature, the executive and the judiciary?
7. Mention the key features of the Indian Constitution.
8. What are the factors the drafting committee had to take into consideration while drafting the constitution?

### **Short Answer:**

**Ans: 1.** A leader misusing his power may send his security guards to beat up his neighbors for a personal reason or ask the police not to take action against a relative who has committed a crime.

**Ans: 2.** A country which is governed by a king or a queen is called a monarchy. While Democracy is forms of government where people can vote to select their respective representative well govern the state on their behalf.

**Ans: 3.** The Indian constitution ensures that the dominant group does not use its power against other, less powerful people or groups. The Constitution contains rules that ensure that minorities are not excluded from anything that is routinely available to the majority. It also prevents the domination of the majority over the minority.

**Ans: 4.** If there would have been no restrictions to powers of elected representatives, they may have misuse their powers. They could have used their powers in doing wrong deeds. They could even have supported a single religion.

**Ans: 5.** Universal adult franchise is every adult citizen having a right to vote irrespective of sex, caste, creed, education, and financial status.

**Ans: 6.** The legislature refers to our elected representatives. The executive is a smaller group of people who are responsible for implementing laws and running the government. The judiciary refers to the system of courts in this country.

**Ans: 7.** The key features of the Indian constitution are:

- Federalism
- Parliamentary Form of Government
- Separation of Powers
- Fundamental Rights
- Secularism

**Ans: 8.** The committee had to keep in mind that India was a land of many communities, languages and many religions. India was a land of diverse cultures and the Princely states in India had to be considered. The partition of the country into India and Pakistan was about to happen and the drafting committee had to bear this in mind. Finally, the biggest consideration was the socio-economic condition of a majority of Indians which was in a bad state.

### QUESTION/ANSWERS:

**Q.1. ANS.** There are various reasons why a democratic country needs a constitution:

The basic ideals on the basis of which we as citizens aspire to live in our country are mentioned in the constitution.

1. It tells the fundamental nature of society.
2. To define the nature of the political system of the country.
3. It states a set of rules based on which people belonging to different religions and communities can peacefully co-exist with each other.

**Q.2. ANS.** In Article 35 of the 1990 constitution of Nepal, the powers to rule the country, to set rules and to manage the country are all vested in the king of the country and the ministers appointed under him. However, Article 75 of the 2015 constitution of Nepal states that the rules, governance and management of the country will be based on the laws mentioned in the constitution of the country under the supervision of Ministers.

**Q.3. ANS.** In a democracy, the citizens of the country are responsible for electing their representatives. However, there is always a possibility that the leaders might misuse their authority and use it for wrong purposes. Hence the constitution has provided measures to safeguard the country against such misuse of powers.

**Q.4. ANS.**

a. The minority here are the 10 female teachers teaching in the school. It is important to keep the point of view of the female teachers in mind, because despite being a minority, their opinions are of great importance and no decisions made keeping the majority views in mind, should cause discomfort for female teachers.

b. Here, the minority is the 5 percent Buddhist population in the city. Their views should be respected. Just because they are in minority with different religious beliefs, they should not be disrespected. Any decision should be taken keeping in mind the religious feelings of Buddhist population.

c. The minority here are the 20 percent non-vegetarians having food at the factory mess. It is important that the food prepared in the factory mess must be prepared for both vegetarians and non vegetarians.

d. In this case, the minority are the 10 students who do not belong to well-off families. It is important to keep their viewpoint in mind because they may not be able to contribute to the various expenses required by the school and they should not feel humiliated for the same.

**Q.5. ANS.**

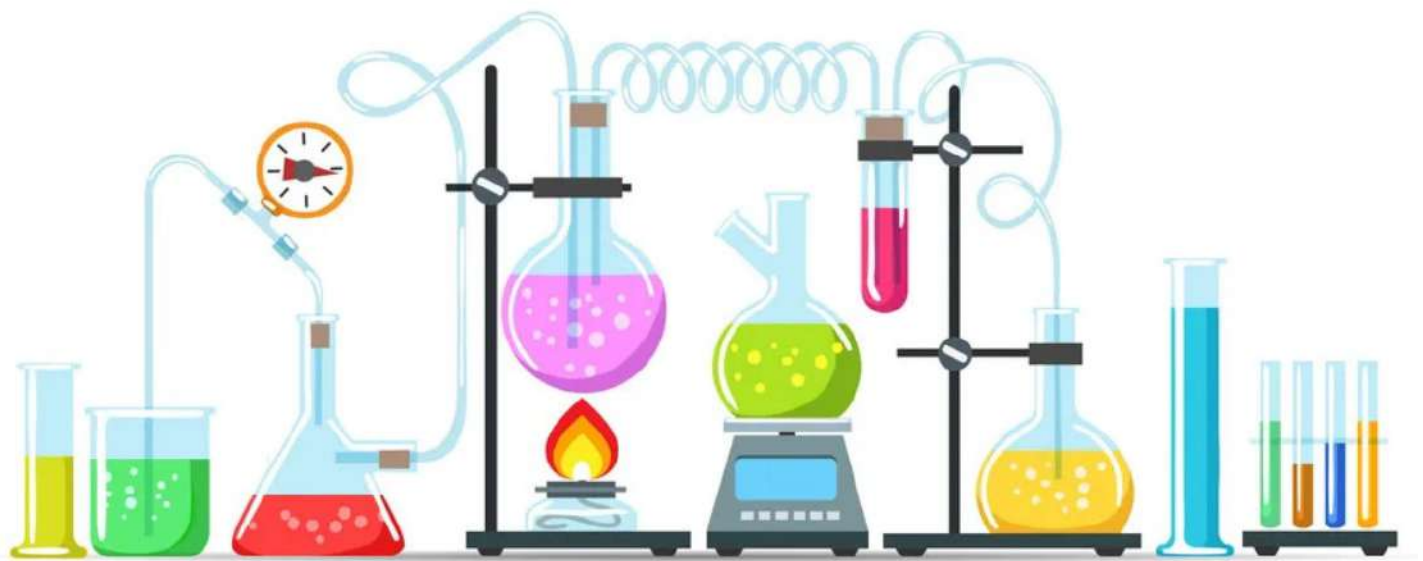
- i. Federalism: It is important because in a country like India, there are people living at different levels and only one level of government cannot govern them. Hence, to form a government for the different levels is important.
- ii. Separation of powers: There are three organs of governance: Legislature, Executive, and Judiciary. Each of these organs have different powers and serve different functions. In order to prevent the misuse of power by any one branch of Government, the constitution says that each of these organs should exercise different powers.
- iii. Fundamental Rights: These rights are set of rights that the constitution offers to every citizen of the country. These rights give every citizen of the country to be considered as equal, to not get discriminated based on caste, culture or religion.
- iv. Parliamentary form of Government: A democratic Government is one where the citizens of the country have the right to elect their representatives. When the constitution was being made, it was made sure that every citizen of country will have the right to elect leaders under Universal adult franchise.

**Q.6. ANS.**

- a) Bangladesh: Assam, West Bengal, Mizoram, Meghalaya and Tripura.
- b) Bhutan: West Bengal, Arunachal Pradesh, Sikkim, and Assam.
- c) Nepal: Bihar, Uttar Pradesh, Uttarakhand , West Bengal and Sikkim.

# SCIENCE

## Chapter 2: Coal and Petroleum



**8<sup>th</sup>**

## Coal and Petroleum

### Classification of Natural Resources

Natural resources can be classified into two types:

- **Inexhaustible Natural Resources:** The resources which are present in unlimited quantity in nature and are not likely to be exhausted by human activities are called inexhaustible natural resources. Examples: Sunlight, air
- **Exhaustible Natural Resources:** The resources which are present in a limited quantity in nature and can be exhausted by human activities are called exhaustible natural resources.

Examples: Forests, wildlife, minerals, coal, petroleum

**Fossil fuels:** The natural fuels formed from the remains of living organisms buried under the Earth long, long ago are called fossil fuels.

#### Difference between exhaustible and inexhaustible resources

Exhaustible Natural Resources	Inexhaustible Natural Resources
Available in limited quantity in nature	These are abundant in nature
Formed over a large period of time.	These are formed almost everyday
They can not be used over and over again. They do not last forever	They can be used over and over again. They last forever.
Example:- Coal, petroleum, natural gas etc.	Example:- Sunlight, wind, water etc.

#### Resources:

Various materials which are used to fulfill or accomplish needs of a human. In other words, we can say that



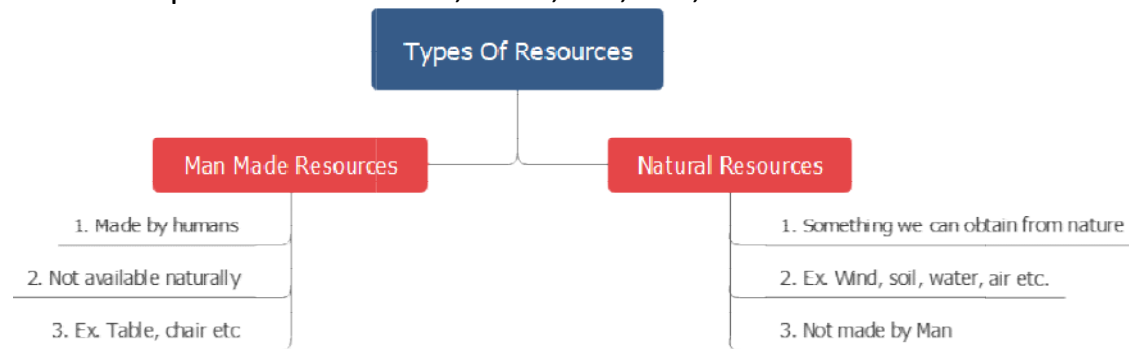
A 'resource' is anything in the environment that can be used. Resources can be broadly divided into following two categories

### Natural Resources

- Natural gas which can be obtained naturally.
- Some of the examples of natural resources includes Air, Soil, Water, Sunlight, Coal etc.

### Man-made Resources

- These are the resources which are made by man.
- Some of its examples includes Table, Chair, Car, Bus, Plastic etc.



## Coal

- Coal is a hard, black, combustible mineral which consists mainly of carbon.
- It is found in deep coal mines under the surface of the Earth.



### Coal An Exhaustible Resource

#### Formation of Coal

- Coal was formed by the decomposition of large land plants and trees buried under the Earth about 300 million years ago.
- About 300 million years ago, the Earth had dense forests in the low-lying wet areas.
- Due to natural calamities such as earthquakes, volcanoes and floods, these forests were

buried under the surface of the Earth.

- As more soil got deposited on them, they were compressed.
- As a result, the temperature also rose as they sank deeper and deeper.
- Due to high pressure and temperature and the absence of air, the wood of the buried forest plants and trees slowly got converted into coal.
- The slow process by which the dead plants buried under the Earth have become coal is called carbonization.
- Because coal was formed from the remains of the plants, it is called a fossil fuel.
- On heating, coal, which is mainly carbon, produces carbon dioxide gas and a lot of heat energy.  $C + O_2 \rightarrow CO_2 + \text{Heat}$



### Uses of Coal

- As a fuel in homes and industries.
- As a fuel in thermal power plants to generate electricity.
- Earlier, it was used in railway engines to produce steam to run the engine.

### Products of Coal

The coal obtained is processed in the industry to obtain useful products such as coke, coal tar and coal gas.

### Coke

- It is a tough, porous and black substance.
- It is an almost pure form of carbon.
- It is used in the manufacture of steel and in the extraction of metals.

### Coal Tar

- It is a black liquid with an unpleasant smell.
- It is a mixture of approximately 200 substances.
- The products of coal are used to make synthetic fibers, drugs, plastics, synthetic dyes, perfumes, paints, varnishes, pesticides, photographic materials and roofing materials.
- Bitumen, a petroleum product, is used in place of coal tar for metalling roads.

### Coal Gas

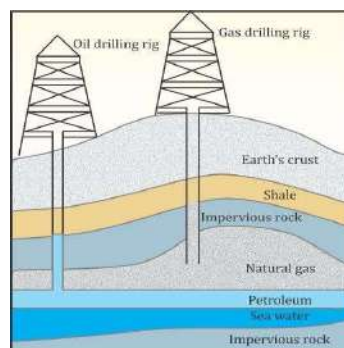
- Coal gas is obtained during the processing of coal to get coke.
- It is used as a fuel in many industries situated near coal processing plants.

## Petroleum

- It is a dark-coloured, thick crude oil found deep below the ground in certain areas.
- Petroleum means rock oil (petra = rock, oleum = oil).
- Just like coal, petroleum is also a fossil fuel.

### Formation of Petroleum

- Petroleum was formed from organisms living in the sea.
- As these organisms died, their bodies settled at the bottom of the sea and got covered with layers of sand and clay.
- Due to high pressure, heat, action of bacteria and the absence of air, the dead remains of the tiny plants and animals were slowly converted into petroleum.
- The petroleum thus formed got trapped between two layers of impervious rocks, forming an oil deposit.



### Refining of Petroleum

- Petroleum is a mixture of various constituents such as petroleum gas, petrol, diesel, lubricating oil and paraffin wax.
- The process of separating the various constituents/fractions of petroleum is known as refining.
- Refining is carried out in a petroleum refinery.

### Constituents of Petroleum and their Uses

Constituents of Petroleum	Uses
Liquid Petroleum Gas	Fuel for home and industry
Petrol	Motor and aviation fuel, solvent for dry cleaning
Kerosene	Fuel for stoves, lamps and jet aircraft
Diesel	Fuel for heavy motor vehicles, electric generators
Lubricating oil	Lubrication
Paraffin wax	Making ointments, candles, <i>Vaseline</i>
Bitumen	In paints and road surfacing

### Natural Gas

- Natural gas mainly consists of methane with small quantities of ethane and propane.
- When natural gas is compressed by applying pressure, it is called compressed natural gas(CNG).
- It is a very important fossil fuel because it is easy to transport through pipes.
- It is a clean fuel.

#### Uses

- CNG is used for power generation.
- It is used as a fuel for transport vehicles because it is less polluting.
- It is used directly for burning in homes and factories through a network of under ground pipes.
- It is also used as a starting material for the manufacture of several chemicals and fertilisers.

#### Conservation of Natural Resources

- The amount of coal, petroleum and natural gas present in the Earth is limited.
- The burning of fossil fuels is a major source of air pollution and is also linked to global warming.
- So, we should use fossil fuels only when necessary. This will result in a better

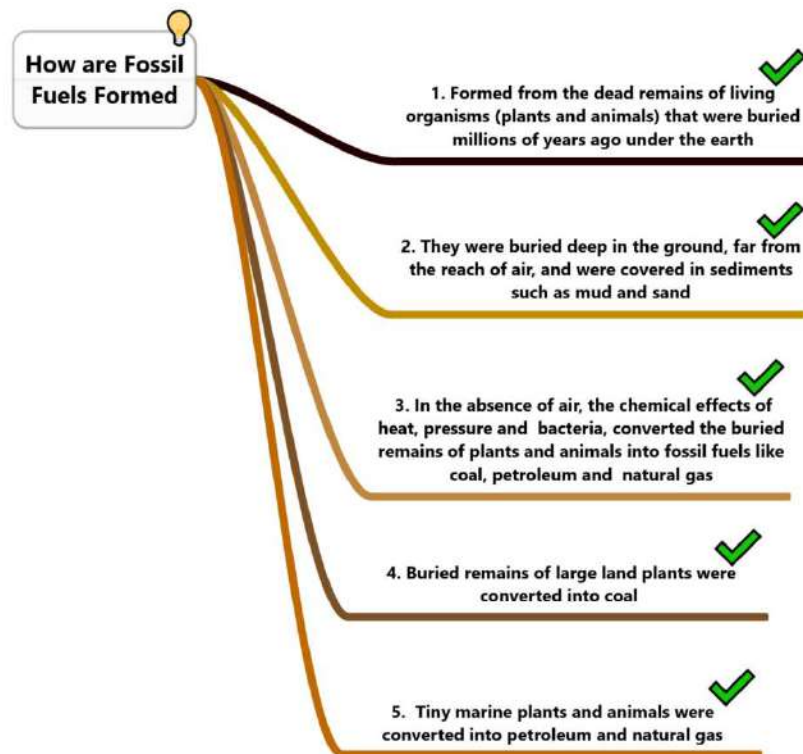
environment, lesser risk of global warming and fossil fuel availability for a longer period of time.

- Tips from the Petroleum Conservation Research Association to save petrol/diesel:
  - a. Drive at constant and moderate speed as far as possible
  - b. Turn off the engine at traffic signals or at places where one has to wait
  - c. Ensure correct tyre pressure
  - d. Ensure regular maintenance of vehicles

### Fossil Fuels

- Fossil fuels are renewable fuels produced from the remains of long-dead living organisms buried beneath the earth.
- Coal, petroleum, and natural gas are examples of fossil fuels.
- They were created by the decomposition of prehistoric plant and animal remains (fossils) which were buried under the earth a long time ago.
- These are exhaustible natural resources.

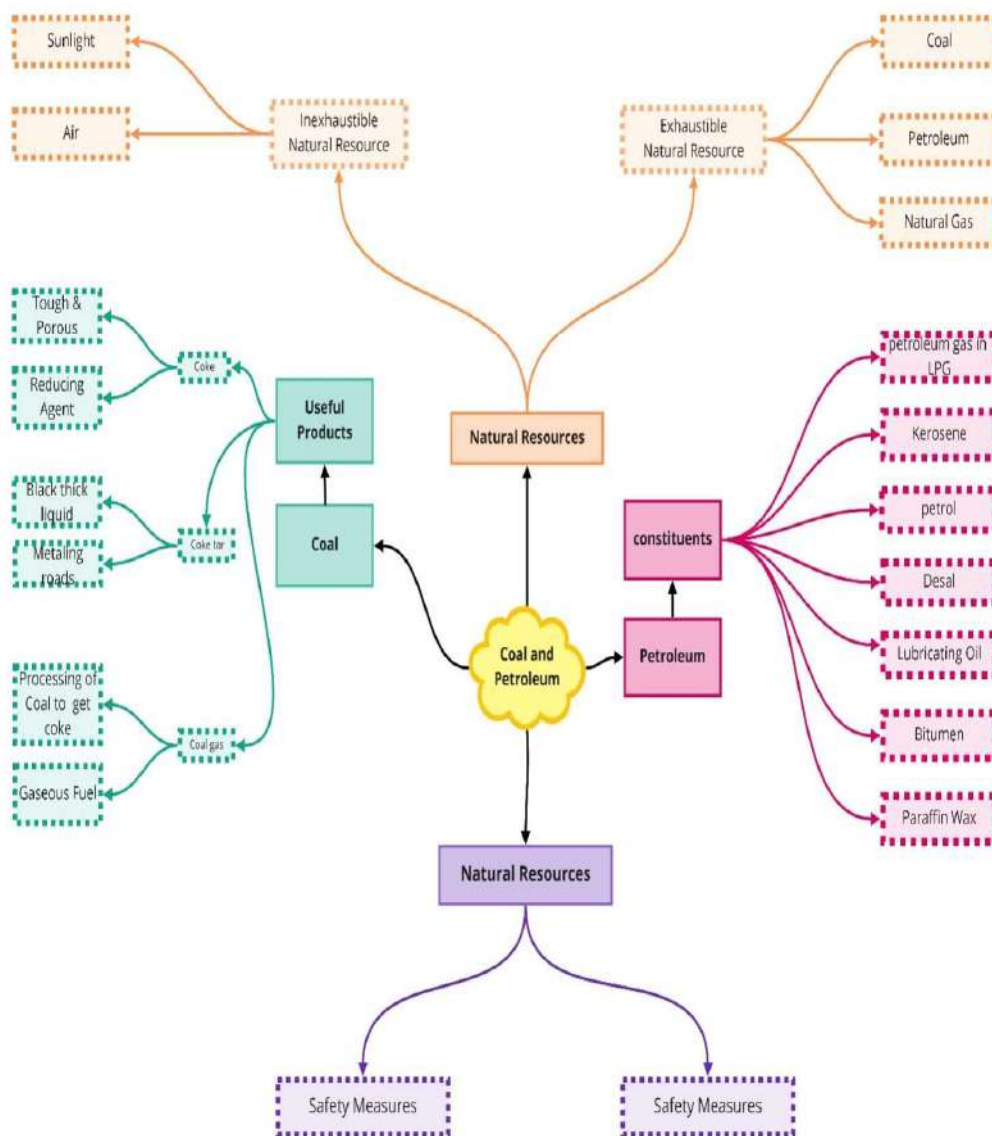
### How Fossil Fuels were Formed



### Conservation of Resources

Conservation is the sustainable use and protection of natural resources. The main aim of conservation is to maintain an adequate supply of these resources so that they are available in the future also.

- PCRA (Petroleum Conservation Research Association) is an agency which helps in the conservation and preservation of fossil fuels. This agency suggested some ways to save diesel or petrol.
- Avoid excessive braking.
- Turn off the engine when not in use.
- Vehicle should be checked and serviced regularly.





## Important Questions

### Multiple Choice Questions-

Question 1. The most commonly used liquid fuel in our homes is:

- (a) kerosene      (b) petrol      (c) diesel      (d) fuel oil

Question 2. The main elements present in petroleum are:

- (a) carbon and oxygen      (b) carbon and nitrogen      (c) carbon and hydrogen  
(d) hydrogen and oxygen

Question 3. The main gas present in LPG is:

- (a) methane      (b) Propane      (c) Butane      (d) hexane

Question 4. CNG is:

- (a) combined natural gas      (b) compressed natural gas      (c) compressed nitrogen gas  
(d) clean natural gas.

Question 5. The place in India where natural gas is directly supplied through pipes (or) burning in homes and factories is:

- (a) Lucknow      (b) surat      (c) vadodara      (d) munai

Question 6. "Black gold":

- (a) coal      (b) coke      (c) graphite      (d) petrokum

Question 7. Hydrogen gas obtained from natural gas is used:

- (a) for fuelling rockets      (b) for production of fertilisers      (c) as fuel to be used at home  
(d) none of these

Question 8. Petrochemicals are obtained from

- (a) petroleum      (b) natural gas      (c) petroleum and natural gas      (d) none of these

Question 9. Which of the following can be prepared in laboratory from dead organisms:

- (a) coal      (b) petroleum      (c) natural gas      (d) none of these



8. Which gas is produced when coal burns in air?
9. Name the gas which is formed when coal is heated in the absence of air.
10. What is the purest form of carbon?
11. What is the main use of coke?
12. How many substances are found in coal tar?
13. Name the substance obtained from the coal tar and used to repel moths and insects.
14. Which substance is used for road surfacing these days?
15. Where was the first oil well drilled?

### Short Questions :

1. What is Inexhaustible Natural Resource?
2. Define Exhaustible resources with few examples.
3. How was Coal formed?
4. How was Petroleum formed?
5. What do you mean by refining and petroleum refinery?
6. What do you understand by Petrochemical products. What are their uses?
7. Name few places where Natural Gas has been found in India.
8. Why should we use some resources like coal and petroleum in limit?
9. What are the advices of PCRA to save petrol/diesel while driving?
10. What are the harmful effects of using fossil fuels?

## ANSWER

### MCQ:

Answer

(a) Kerosene:

Kerosene is commonly used liquid fuel in our homes.

Answer

(c) carbon and hydrogen

The main elements present in petroleum are carbon and hydrogen.

Answer

(c) Butane

The main gas present in LPG is Butane.

Answer

(b) compressed natural gas

CNG is Compressed Natural Gas.

Answer

(c) vadodara

The place in India where natural gas is directly supplied through pipes for burning in homes and factories is Vadodara

Answer

(d) petrokum

Petroleum is 'Black gold'.

Answer

(b) for production of fertilisers

Hydrogen gas obtained from natural gas is used for production of fertilisers.

Answer

(c) petroleum and natural gas

Petrochemicals are obtained from petroleum and natural gas.

Answer

d) none of these

Coal, petroleum and natural gas cannot be prepared in laboratory from dead

Answer

(c) over 100 billion cubic metres

The estimated reserves of natural gas in India are over 100 billion cubic metres.

Answer

(b) the known reserves of fossil fuels will last for a long period of time

Fossil fuels will last only for a short period of time.

Answer

(d) all of these

Natural gas is called clean fuel because it burns without producing any smoke, it burns completely, it does not leave behind any residue.

Answer

(b) natural gas is subjected to high pressure

CNG is obtained when natural gas is subjected to high pressure.

Answer

(c) 95%

The percentage of methane in natural gas is 95%.

Answer

(c) CNG

CNG is a non-polluting fuel for transport vehicles

### Very Short :

1. **Answer:** (i) Air (ii) Water

2. **Answer:** (i) Car (ii) Bus

3. **Answer:** (i) Air (ii) Water

4. **Answer:** (i) Coal (ii) Natural gas

5. **Answer:** Air, water and soil are provided by nature so they are called natural resources.

6. **Answer:** (i) Air (ii) Sunlight

7. **Answer:** Coal, Petroleum and Natural gas are formed by fossils, so they are called fossil fuels.

8. **Answer:** Carbon dioxide.

9. **Answer:** Coal gas.

10. **Answer:** Coke.

11. **Answer:** It is used in the extraction of metals.

12. **Answer:** About 200 substances.

13. **Answer:** Naphthalene balls.

**14. Answer:** These days bitumen is used for road surfacing in place of coal tar.

**15. Answer:** The first oil well was drilled at Pennsylvania, USA, in 1859.

### Short Answer :

- 1. Answer:** The resources which are present in unlimited quantity in nature and are not likely to be exhausted by human activities are known as Inexhaustible Resources. For **Example:** Sunlight, air.
- 2. Answer:** All resources which are found in a limited quantity in nature are known as Exhaustible resources. They can be exhausted by human activities. Example of these resources is Forests, Minerals, Coal, Petroleum, Natural Gas etc.
- 3. Answer:** About 300 years ago the earth had dense forests in low lying wetland areas. Due to natural processes, like flooding these forests got buried under the soil. They got sunk deeper and deeper and temperature gets increasing day by day, under high pressure and high temperature dead plants slowly got converted to coal.
- 4. Answer:** Petroleum was formed from organisms living in the sea. As these organisms died, their bodies settled at the bottom of the sea and got covered with layers of sand and clay. Over Millions of years in absence of air and under high temperature and high pressure the dead organisms get transformed into Petroleum and natural Gas.
- 5. Answer:** The process of separating various components or fraction of petroleum is called refining. This process is carried out in petroleum refinery.
- 6. Answer:** Petroleum and natural gas provide many useful substances. These are termed as 'Petrochemicals'. These are used in manufacturing of detergents, fibres, polythene and other man made plastics
- 7. Answer:** In our country Natural Gas has been found in Tripura, Rajasthan, and Maharashtra and in the Krishna Godavari Delta.
- 8. Answer:** As we know Coal and petroleum are fossil fuels. The dead organisms takes millions of years to get converted into these fuels, On the other hand the known reserves of these will last almost a few hundred years. A part from this since these products are not environmental friendly as burning of these fuels is a major cause of air pollution and their use is also linked to global warming therefore we should use these resources only when it is actually required.
- 9. Answer:**



- I. Drive at a constant and moderate speed as far as possible
- II. Switch off the engine at traffic lights or at a place where you have to wait
- III. Ensure correct tyre pressure
- IV. Ensure regular maintenance of the vehicle.

**10. Answer:** Harmful effects of burning fossil fuels are as following:

- (i) Burning of fossil fuels cause air pollution.
- (ii) They also cause global warming because they produce greenhouse gas like carbon dioxide on burning.

## TEXTUAL QUESTIONS

1. The advantage lies in the fact that CNG and LPG on combustion does not produce much of the pollutants like  $\text{SO}_2$ ,  $\text{NO}_2$ , diesel particles and sulphur particulates etc, So using CNG and LPG as alternative to the traditional fuels will help in tackling the problem of green house, gases to some extent. Other fuels are more carcinogenic than CNG as their combustion emits ultrafine particles which are extremely toxic.
2. The petroleum product used for surfacing of roads in Asphalt.
3. About 200 million years to 250 million years ago. The earth had dense forests in low lying wet land areas. Due to natural processes, like flooding, These forests got buried under the soil, As more soil deposited over them, they were compressed. Under humid & hot conditions. They were attacked by anaerobic bacteria which progressively removed hydrogen and oxygen, leaving behind carbon. Due to very high temperature and pressure of the earth, the carbon got compact to form stony residue, called coal. This slow conversion of wood into coal by a biochemical process extending over millions of years is called carbonization.
6. It takes millions of years for the fossil fuel to be formed. Thus, they cannot be renewed over a short period of time, say hundred or thousand years. Scientists are warning that if we continue consuming these fuels at the present rate, they will get exhausted in another 100 to 150 years, thereby causing unprecedented energy. Crisis from which our world will never recover.
7. Characteristics of coal :-
  - a) It is left as a solid residue in the test tube after the destructive distillation of coal.

- b) It contains 95% to 98% of free carbon
- c) It is almost free from volatile impurities.
- d) It is bad conductor of heat and electricity.

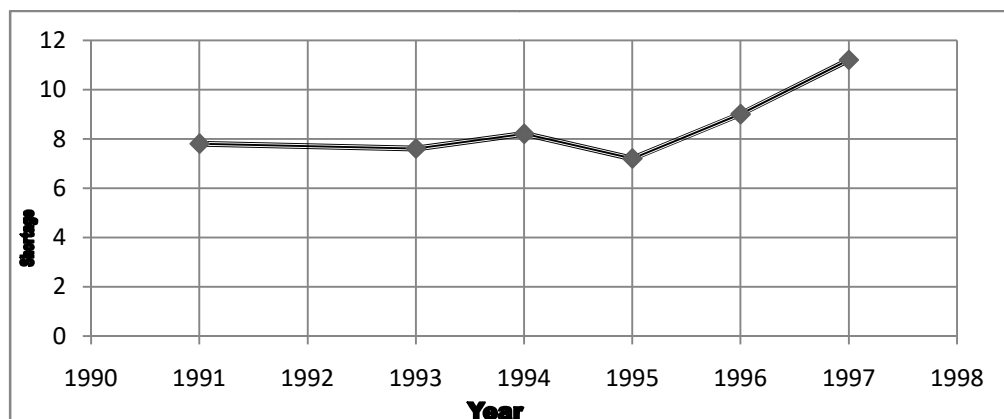
### USES

- a) It burns easily so it is used as house hold fuel.
- b) It is used in extraction of metals such as copper, iron, tin, lead and zinc from their oxide ores.
- c) It is used in the manufacture of artificial graphite.
- d) It is used in the manufacture of calcium carbide. The Calcium carbide is futher used in manufacture of acetylene gas. Which is in turn used in manufacture acetic acid and plastic like PVC.

8. Petroleum is a complex mixture of solid, liquid and gaseous hydrocarbons, mixed with salt water and earthy particles.

It is believed that millions of years ago very large number of microscopic sea animals died because of some calamity and their bodies sank to the bottom sea. These dead bodies then got covered with mud and sand. Over millions of years these organisms decayed in the absence of air under very higher temperature and pressure of the earth. The product of decay was petroleum and natural gas.

9.



10. In exhaustible Natural Resources : Those resources which are present in unlimited quantity and are not likely to be exhausted by human activity are exhaustible natural resources (sunlight, air)

11. Exhaustible Natural Resources:- The amount of these resources are limited. They can be exhausted by human activity in the long run (coal, petroleum, natural gas etc.)
12. Natural gas is often described as the cleanest fossil fuel because, It produces less carbon dioxide per joule delivered than either coal or oil and far fewer, pollutants like Sulphur Dioxide and nitrous oxides than any other natural gas.
- 13 Uses of coal:-
  - i. It is used in the manufacture of coke.
  - ii. It is used in the manufacture of coal gas.
  - iii. It is used as fuel.
- i. It is source of organic compounds like benzene, toluene, anthracene etc.

**Activity** : To make a list of the products of Coal and Petroleum processing.

**CLASS:- 8<sup>TH</sup>**

**CHAPTER NO:-01**  
**NETWORKS**

**COMPUTER**

**NOTE:- READ THE CHAPTER THOROUGHLY AND ANSWER THE GIVEN QUESTIONS.**

**1. Fill in the blanks.**

1. The interconnection between computers is called a \_\_\_\_\_.
2. Each computer in a network is called a \_\_\_\_\_.
3. \_\_\_\_\_ and \_\_\_\_\_ are two wireless technologies that use radio waves for connecting various devices.
4. \_\_\_\_\_ is an electronic device that allows a computer to transmit data over telephone or cable lines.
5. A \_\_\_\_\_ is a hardware device that connects two different networks for sending data.

**2. Write (T) for true or (F) for false statements.**

1. A personal area network or PAN covers a very small area within the range of 10 meters. \_\_\_\_\_
2. In tree topology, each node is connected to two other computers, one on each side, to form a closed ring-like structure. \_\_\_\_\_
3. A LAN can also be wireless. \_\_\_\_\_
4. A hub is a device that acts as a common connection point for a number of computers in a LAN. \_\_\_\_\_

**3. Answer the following questions.**

1. Name the types of computer networks?

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2. Define topology.

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3. Define the following:

- a. Modem

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b. Hub

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**CHAPTER NO:-02**  
**USING ACCESS**

**DATABASE MANAGEMENT**

**NOTE:- READ THE CHAPTER THOROUGHLY AND ANSWER THE GIVEN QUESTIONS.**

**1. Fill in the blanks.**

1. A \_\_\_\_\_ is a collection of data organized in a manner that allows easy access, retrieval, and use of that data.
2. Software that helps to organise the data is called \_\_\_\_\_.
3. \_\_\_\_\_ is a database management system that was launched by Microsoft.
4. A \_\_\_\_\_ is a user-friendly interface that provides users the facility to enter data in tables and queries.

**2. Write (T) for true or (F) for false statements.**

1. DBMS provides various techniques to check on the redundancy of data. \_\_\_\_\_
2. A form is used to fetch the data from the database. \_\_\_\_\_
3. Duplicate entries can be made in a database in Access. \_\_\_\_\_
4. A table can be created in design and datasheet view. \_\_\_\_\_

**3. Answer the following questions.**

1. What is data and information?
- 
- 
- 

2. What is DBMS?
- 
- 
-

---

3. What are the various views available in Access?

---

4. Name data types available in Access.

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4. Draw the diagram representing Personal area Network on a plain sheet of paper.(refer book Pg no 09)

**NOTE:- DO ALL THE ASSIGNED EXERCISES ON THE PROVIDED WORKSHEET.**



## UNIT I

### HOW TEACHERS LEARN

#### Summary

The lesson How Teachers Learn is abridged from John Holt's book How Teachers Learn. This classical book of educational thoughts offers teachers and parents a deep insight into the nature of early learning. In this book he looks at how we learn, read, count and to reason and how we can nurture and encourage these natural abilities in our children.

In this lesson, the narrator John Holt, being a teacher explains how he learnt some good things from a five year old child, namely Nora. On a weekend the teacher visited Nora's family and she approached him with a book in her hands asking for her help. This started a very beautiful friendship between the two.

Most of the time the teacher sat still and observed her while she was going through the book and only when she seemed badly stuck did he said anything and that too only by suggesting how she could figure out the word. Sometimes when she was unable to read it he asked her to skip it and proceed. One day the teacher observed a very odd thing. Nora misread a word that she had read correctly before. The teacher was puzzled and wondered how such a smart child can do such a mistake that is to read the word correctly on one page and forget it on the others.

The teacher came to realization that it is not easy to remember the shape of a word if she had seen the word for the first time. The narrator, teacher, then shares his experience of difficulty for locating number of times a word was repeated in a newspaper. All the words of the paper seemed to be a jumble of figures when he read it the first time.

The teacher again reinforces the idea that the children from educated families do learn the basic words, shapes and concepts as they come across those in their homes frequently from their childhood and how the children from unlettered homes are at a disadvantage.

#### Glossary:-

- |     |                    |   |
|-----|--------------------|---|
| 1)  | Figure out         | Understand                                    |
| 2)  | Badly stuck        | Finding it very difficult to go on            |
| 3)  | Skip               | To leave                                      |
| 4)  | Bluff              | To pretend in order to deceive                |
| 5)  | Ad                 | Advertisement                                 |
| 6)  | Type               | Shapes of different letters used for printing |
| 7)  | Oriental           | Of the eastern part of the world              |
| 8)  | Trivial            | Unimportant                                   |
| 9)  | Unlettered         | Illiterate                                    |
| 10) | Formal Instruction | Regular teaching in the classroom             |

**Note:- Use these words in sentences of your own.**

#### **Answer the following Questions:-**

- Ans1:- Nora was a five year old child. The teacher had gone to Nora's family to spend a weekend. Though he had not seen Nora since she was a small baby. They soon became friends.
- Ans2:- The teacher sat still and silent while observing Nora. At first it was not clear how she wanted the teacher to help her. Most of the time teacher sat still and silent. Only rarely when she seemed badly stuck, then the teacher used to help her to figure it out.
- Ans3:- The strange thing that happened with Nora was that she misread a word that previously she had read correctly. The teacher was puzzled because he had faced incidences like this in his own classroom when children seemed to forget things that they had supposedly learned.
- Ans4:- No, she was not a careless child because she was reading the book as well as she could, putting all of her concentration into it.
- Ans5:- To understand the learning problems of the children, a teacher should try to see things as if through their eyes. It is easy for someone to remember the look of a word from one page to the next as they are already familiar with the words. Teachers have an expert's eye for significant detail and the child does not.
- Ans6:- The experience that popped into the teachers mind after Nora's learning problem was that one day he took a sheet of printing in some Indian language and tried to find words that occurred most often on the page. It was difficult and took a long time for him to recognize that word at sight, often he would go right by it without noticing it.
- Ans7:- The reason why children from unlettered homes are at a disadvantage is that they lack the familiarity with the shapes and looks of words and letters.
- Ans8:- The teacher learned that before the children begin to think what particular letters and groups of letters said, they had to get familiar with the looks of letters in general, just as a child learning to talk must first become familiar with the sound of the talk.

#### Language Work

**Complete the following sentences: [Page No.4]**

- A) I borrowed some clothes.
- B) I bought an old Piano from him.
- C) I ran away from him.
- D) He took a glass of water from me.
- E) They were defeated.

**Form Adjectives from the following words: [Page No.5]**

- |    | Word     | Adjective    |
|----|----------|--------------|
| 1) | Alphabet | Alphabetical |

2)	Angel	Angelic
3)	Shape	Shapely
4)	Book	Bookish
5)	Man	Manly
6)	Government	Governmental
7)	Minister	Ministerial
8)	Elephant	Elephantine
9)	Tiger	Tigerish
10)	Day	Daily
11)	College	Collegiate

**Message writing [Page No.6]**

Format

- |    |                            |    |                      |
|----|----------------------------|----|----------------------|
| 1) | Make a box.                | 2. | Write date and time. |
| 2) | Start with salutation.     | 3. | Write the message.   |
| 3) | Write the addressors name. |    |                      |

**Message**

29-11-2019.

11:00 AM

Dear Asif,

Khalid called. He'd be late for the dinner you planned at Ahdoo's by one hour as he had to complete a project at office. I am leaving to pick up my relatives from the Airport.

Rauf

**Grammar Work:-**

Past Participle:- A participle is a non finite form of the verb that is used adjectively and to form compound tenses. When a participle ends with "-ed", "-en", "-d", "-t" and "-n" and denotes an action that is completed, it is called past participle. Examples are:

- 1) The wounded soldiers were taken home.
- 2) The painted shop was inaugurated in the morning.

Q1:- Fill in the blanks by using past participle form of given words:-[Page No.7]

- 1) I am living in a rented room.
- 2) It is not safe to sit in a broken chair.
- 3) Some people do not like cooked vegetables.
- 4) The head master wanted a written report.
- 5) That is a forgotten quarrel.

Q2:- Rearrange the words to form meaningful sentences:-[Page No.8]

- 1) I had made a new suit.
- 2) She has never heard spoken English.
- 3) I heard your names called.
- 4) We want this work done quickly.
- 5) His knowledge makes him respective.

Let's Write:-[Page No.8]

Q: Write an account on how children learn to write from the given statements.

Ans:- Young children find it very difficult to read since they do not easily recognize words. However, adults can recognize words easily. But adults often find it just as difficult to recognize words in unfamiliar alphabets for e.g; a Tamil reader may find Telugu script puzzling and a Hindi reader may not easily recognize individual Tamil words. Children need plenty of practice in looking at printed words even then they need not to be able to read them first. When children begin to read they should have books with plenty of pictures and these books should be designed carefully. Familiarity with the shapes of letters and words is the first important step and if possible children should be able to work out what familiar words mean rather than what they are always told by the teacher.

# HISTORY

## Chapter 2: FROM TRADE TO TERRITORY



8<sup>th</sup>

## FROM TRADE TO TERRITORY

### East India Company

After the death of Aurangzeb in 1707, the Mughal Empire began to disintegrate. Many Mughal governors and big zamindars declared themselves independent. Many regional kingdoms such as Hyderabad, Awadh and Bengal became independent of the Mughal rule. As a result of new centers of power, the importance of Delhi began to decline. As there was no political unity among the Indian states, the British began to expand their power in the country.

#### Formation and Arrival of the East India Company to India

- The East India Company was formed in 1600. By a charter granted by Queen Elizabeth, the Company got the sole right to trade with the East. Thus, no other group in England could compete with the East India Company in India.
- Although the Company had no rival in Britain, it had to face competition from the other East India Companies such as the Portuguese East India Company, the Dutch East India Company and the French East India Company.
- India at this time was famous for its cotton, silk and spices such as pepper, cloves and cardamom. All the Companies wanted to purchase these commodities which led to an increase in the prices of goods. There were fierce battles among these Companies to capture the Indian markets.
- The various East India Companies also began to fortify their settlements. This brought them in conflict with the local rulers.

#### East India Company in Bengal

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- By 1696, it began building a fort around the settlement. Later, it took the zamindari rights of three villages. One of the villages was Kolkata, which later grew into Calcutta (Kolkata). The Company also forced Aurangzeb to issue a 'farman' granting the Company the right to trade duty-free.
- The officials of the Company who carried on private trade refused to pay the duty to the Government which resulted in huge loss of revenues.

#### Battle of Plessey

- The Company wanted a puppet ruler for Bengal who would allow officials to trade duty-free in Bengal. When Sirajuddaulah asked the Company to stop fortifications and pay the revenues, the Company refused to accept his demands.

- The Nawab locked the warehouse, disarmed the Englishmen and marched to Calcutta and established control over the Company's fort.
- The Company sent reinforcements from Madras under the command of Robert Clive. The Battle of Plessey was fought in 1757. Mir Jaffar, one of the commanders of the Nawab, betrayed the Nawab by not participating in the war.
- Sirajuddaulah realizing that he has been betrayed by his commander, lost his nerves, and fled from the battlefield.



Robert Clive played an important role in establishing supremacy of the Company in India

## Results

- The battle was won by the British. Sirajuddaulah was killed in the battle and Mir Jafar was made the puppet Nawab of Bengal.
- The battle marked the first major victory for the Company. It was now able to trade duty-free in Bengal. The profits earned from the trade were used by the British to increase their military power.

## The Battle of Buxar

- When Mir Jafar protested against the exploitative policies of the Company, he was deposed, and Mir Qasim was made the Nawab. Mir Qasim also protested against the exploitative policies of the Company.
- The Battle of Buxar was fought between the Nawab and the Company's forces. The Nawab and his allies were defeated in the battle.
- Mir Jafar was again made the Nawab of Bengal. He had to pay Rs 5,00,000 every month.
- The Battle later paved the way to the granting of the Diwani (revenue-collecting) rights of Bengal, Bihar and Orissa to the Company.
- This made the British the master of Bengal. They were now able to finance their trading activities by Indian revenues. Besides, the expenses to fight wars to annex Indian territories were financed by Indian revenues.

## Expansion of the British Rule

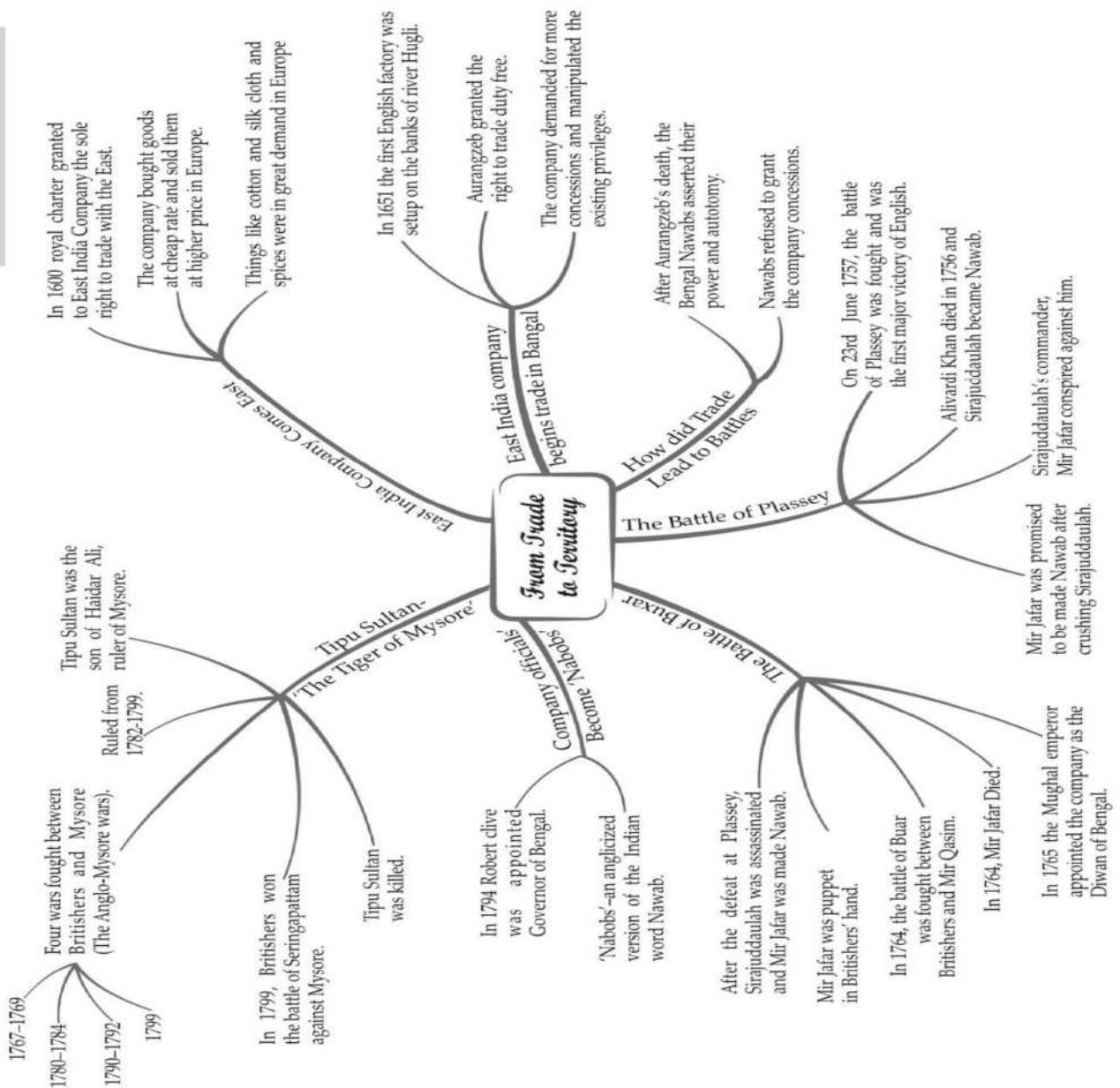
The British formulated various policies to annex Indian states. One of the methods was to

appoint British residents in Indian states who constantly interfered in the internal affairs of the states. The Subsidiary Alliance System and the Doctrine of Lapse were two such plans of the Company which aimed to subjugate the Indian states.

## Subsidiary Alliance System

- Indian states entering subsidiary alliance were protected by the Company's forces but had to pay for the maintenance of British troops.
- Indian rulers were not allowed to have their independent armed forces.
- If Indian rulers failed to make payments to the British, part of their kingdom was taken away as penalty.
- Hyderabad, Mysore, Awadh and Tanjore were some states which entered the subsidiary alliance system with the British.

# MIND MAP : LEARNING MADE SIMPLE CHAPTER-2



## Important Questions

### Multiple Choice Questions-

1. Name of Sirajuddaulah's commander who cheated him at the Battle of Plessey?  
a. Mir Qasim b. Mir Jafar c. Murshid Quli Khan d. Alivardhi Khan
2. Who replaced Mir Jaffar as the Nawab after his protest against the Company?  
a. Mir Qasim b. Bahadur Shah c. Aurangzeb d. Alivardhi Khan
3. Who led the British army at the time of Battle of Plessey?  
a. Vasco-da-Gama b. Warren Hastings c. Lord Wellesley d. Robert Clive
4. Name the Governor – General under whom there was the maximum annexation.  
a. Lord Dalhousie b. Warren Hastings c. Robert Clive d. Lord Hastings
5. Who among the following states was annexed on the argument of misgovernment?  
a. Satara (1848) b. Sambhalpur (1850) c. Udaipur (1852) d. Awadh (1856)
6. Name the powerful Mughal ruler who established his control over a very large area now known as India.  
a. Bahadur Shah b. Mir Jafar c. Aurangzeb d. Mir Qasim
7. Who among the Mughal rulers led the Battle of 1857?  
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8. Name of the Portuguese explorer and discoverer of Sea route to India in 1498.  
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10. After the death of Arivardi Khan in 1756, who became the Nawab of Bengal?  
a. Murshid Quli Khan b. Mir Qasim c. Sirajuddaulah d. Mir Jafar
11. What do you mean by Mercantile?  
a. Freedom fighter b. Mughal Emperor c. Business enterprises d. None of these
12. Which new power was emerging on the political horizon by the 2nd half of the 18th century?  
a. East India Company b. Indian Company c. French Company d. None of these



13. Who were the three powerful Nawabs of Bengal?  
 a. Siraj-ud-Daulah b. Murshid Quli Khan c. Ali Vardi Khan d. All of these
14. The Maratha chiefs were held together in a confederacy under the Peshwa, who were the members?  
 a. Scandia b. Holkar c. Bhonsle and Gaikwad d. All of these
15. What was required by the British army for fighting with Burma, Afghanistan, Egypt?  
 a. Muskets b. Matchlocks c. Both a and b d. None of these

## ANSWER KEY

### MCQ:

1. (b) Mir Jafar 2. (a) Mir Qasim 3. (d) Robert Clive 4. (a) Lord Dalhousie  
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### **Very Short:**

1. Who was the ruler of England in 1600?
2. Why did the Company want a puppet ruler?
3. What was the main reason for the defeat of Sirajuddaulah at Plessey?
4. Why did the Battle of Plessey become famous?
5. Whom did the Company install in place of Mir Jafar?
6. How did the Company purchase Indian goods?
7. Who were called 'nabobs'?
8. Who were the Residents?
9. What purpose did the Residents serve?
10. Name the two rulers under whose leadership Mysore became powerful.

### Very Short Answer:

1. Queen Elizabeth I was the ruler of England in 1600.
2. Aurangzeb's farman had granted the Company only the right to trade duty free. But the officials of the Company, who were carrying on private trade on side, also stopped paying duty. This caused a huge loss of revenue for Bengal.

3. A puppet ruler would willingly give it trade concessions and other privileges.
4. Mir Jafar, one of Sirajuddaulah's commanders, did not fight the battle.
5. It was the first major victory the Company won in India.
6. Company installed Mir Qasim in place of Mir Jafar.
7. It purchased Indian goods with gold and silver imported from Britain.
8. Several Company officials returned to Britain with wealth and led flashy lives and showed their riches with great pride. They were called "nabobs".
9. The Residents were the political or commercial agents and their job was to serve and further the interests of the Company.
10. Through the residents, the Company officials began interfering in the internal affairs of Indian states.
11. Haider Ali and his son, Tipu Sultan.

### Short Questions:

1. Give an account of different European trading companies besides the British East India Company that entered the Eastern markets.
2. What were the grievances of the Company regarding the Nawabs of Bengal?
3. Write a note on Tipu Sultan—The 'Tiger of Mysore'.
4. Give a brief description of all the three Anglo-Maratha wars. Also write the main consequences.
5. What administrative reforms were brought in the sphere of justice?
6. Mention the aftermath of the death of Aurangzeb in 1707?
7. It is said that before the Britishers, the Portuguese already got established in India. Explain how?

### Short Answer:

**Ans: 1.** Different European trading companies were:

(a) The Portuguese. By the time the first English ships sailed down the West coast of Africa, round the Cape of Good Hope, and crossed the Indian Ocean, the Portuguese had already established their presence in the western coast of India and had their base in Goa.

(b) The Dutch. By the early 17th century, the Dutch too were exploring the possibilities

of trade in the Indian Ocean.

(c) The French. The French traders soon arrived on the scene for the same purpose.

**Ans: 2.** The Company declared that the unjust demands of the local officials were ruining the trade of the Company. Trade could flourish only if the duties were removed. It was also convinced that to expand trade it had to enlarge its settlements, buy up villages and rebuild its forts.

**Ans: 3.** Tipu Sultan was the famous ruler of Mysore. He ruled Mysore from 1782 to 1799. Under his leadership Mysore became very powerful. It controlled the profitable trade of the Malabar coast where the Company purchased pepper and cardamom. In 1785 Tipu Sultan stopped the export of these items through the ports of his kingdom, and disallowed local merchants from trading with the Company. He also developed relationship with the French in India to modernise his army with their help. The British got furious. They waged four battles against Tipu Sultan. The last battle proved unfortunate for him. He was killed depending his capital Seringapatam. The way he resisted the British is undoubtedly praiseworthy.

**Ans: 4.** The Company waged a series of wars against the Marathas in order to crush Maratha power:

(a) In the first war there was no clear victor, hence it ended in 1782 with the Treaty of Salbai.

(b) The second Anglo-Maratha War began in 1803 and ended in 1805. This war was fought on different fronts resulting in the British gaining Orissa and the territories north of the Yamuna river including Agra and Delhi.

(c) The third Anglo-Maratha War of 1817-1819 crushed Maratha power. The Peshwa was removed. The Company now had complete control over the territories south of the Vindhya.

**Ans: 5.** Before the reforms were brought, there were Maulvis and Hindu pandits who interpreted Indian laws for the European district collectors who presided over civil courts. The criminal courts were still under a qazi and a mufti. The Brahman pandits usually gave different interpretations of local laws. But there was no uniformity in them. To bring out about uniformity, in 1775 eleven pandits were asked to compile a digest of Hindu laws. N.B. Halhed translated this digest into English. By 1778 a code of Muslim laws was also compiled for the benefit of European judges, under the Regulating Act of 1773, a new Supreme Court was established, while a court of appeal—the Sadar Nizamal Adalat—was also set up at Calcutta.

**Ans: 6.** Aurangzeb died in 1707 which resulted in:

1. Establishment of several regional kingdoms.
2. Governors under the Mughals took over the control over states.
3. Existence of several regional kingdoms was seen.

**Ans:7.** Yes, the Portuguese had been settled in India before the establishment of the Britishers as in 1498, a Portuguese explorer named Vasco da Gama discovered the sea route to India resulting in establishment of base at Goa.

**Lets Recall (Page No. 24)**

### TEXTUAL QUESTIONS

Q1 Match the following (P.NO. 24).

- |                    |  |
|--------------------|--|
| 1. Diwani          | Right to collect land revenue.                             |
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| 3. Faujdari Adalat | Criminal court   |
| 4. Rani Channamna  | Led an anti – British movement in Kitoor. [Today karnatka] |
| 5. Sipahi          | Sepoy  |

Q2. Fill in the blanks(P.No. 24,25):-

- |            |           |          |                  |
|------------|-----------|----------|------------------|
| 1. Plassey | 2. Mysore | 3. Lapse | 4. South Western |
|------------|-----------|----------|------------------|

Q3. State whether True or False

- |      |       |        |       |
|------|-------|--------|-------|
| i. × | ii. × | iii. ✓ | iv. × |
|------|-------|--------|-------|

**Lets Discuss (Page NO. 25)**

Q4. European trading companies were looking for new lands from which they could buy goods at cheap prices and carry them back to Europe to sell at high prices. The fine qualities of cotton & silk produced in India had a big market in Europe. Indian spices like pepper, cloves, cardamom & cinnamon too were in great demand. Hence, European trading companies were attracted to India,

Q5. After the death of Aurangzeb the Bengal nawabs asserted their power and autonomy. Through the 18<sup>th</sup> century, the conflicts between them and the East India company intensified. The nawabs refused to grant the company concessions, demanded large tributes, denied it the right to mint coins, and stopped it from extending its fortifications. They claimed that the company was depriving the Bengal govt. of huge amounts of revenue, and also undermining their authority by refusing to pay taxes. Writing disrespectful letters and humiliating them and their officials.

On its part, the company declared that to trade was getting ruined because of the demand of the local officials. It is believed that trade could only flourish if the duties were removed. To expand trade, it wanted to enlarge its settlements buy up villages, & rebuild its forts.

Q6. By the assumption of diwani the British got control over the revenue of Bengal as they got revenue they could easily buy the cotton and silk textiles, pepper, cardamom & cloves, they could maintain their own troops & built forts & company offices.

Subsidiary alliance is an alliance between a dominant nation and a nation that it dominates.

Q7. This policy was introduced by Lord Wellesley. According to this policy, the rulers were not allowed to have their own independent army. The British provided them with armed forces & in return the ruler had to pay for the subsidiary forces, If the ruler failed to pay the taxes, a part of his territory was annexed as a fine. Example Awadh & Hyderabad were taken away with this alliance.

Q8.a) British territories were broadly divided into administrative units called presidencies. Three presidencies like Bengal, Madras, Bombay whereas under the Indian ruler 1 administration was divided into 4 parts – District (Zila), Paragana, Tehsil & villages.

b) The supreme head of the administration was the governor – general, whereas under the Indian administration system the supreme head was king or Nawabs.

c) Warren Hastings introduced the new system of justice each district was to have two courts. Civil & criminal court.

d) The European district collected presided over civil court. The criminal courts were still under a Qazi and a Mufti under the regulating act of 1773, a new supreme court was established.

The main figure in Indian district was collector.

f) According to his title collector, his main job was to collect the revenue and the taxes & maintain law & order in his district with the help of judges police officers & darogas

Q9.i. According to the Indian caste only 'khatriya' were allowed to work in their army but the British company trained common peasants to become soldiers.

ii. There was a change in the company's warfare technology where cavalry system of army was declined and infantry requirement became more important.

iii. The soldiers were subjected to European style training drill and discipline.

iv. The caste & community feeling in the army & between the soldiers was totally ignored.

# HISTORY

## Chapter 2: FROM TRADE TO TERRITORY



8<sup>th</sup>

## FROM TRADE TO TERRITORY

### East India Company

After the death of Aurangzeb in 1707, the Mughal Empire began to disintegrate. Many Mughal governors and big zamindars declared themselves independent. Many regional kingdoms such as Hyderabad, Awadh and Bengal became independent of the Mughal rule. As a result of new centers of power, the importance of Delhi began to decline. As there was no political unity among the Indian states, the British began to expand their power in the country.

#### Formation and Arrival of the East India Company to India

- The East India Company was formed in 1600. By a charter granted by Queen Elizabeth, the Company got the sole right to trade with the East. Thus, no other group in England could compete with the East India Company in India.
- Although the Company had no rival in Britain, it had to face competition from the other East India Companies such as the Portuguese East India Company, the Dutch East India Company and the French East India Company.
- India at this time was famous for its cotton, silk and spices such as pepper, cloves and cardamom. All the Companies wanted to purchase these commodities which led to an increase in the prices of goods. There were fierce battles among these Companies to capture the Indian markets.
- The various East India Companies also began to fortify their settlements. This brought them in conflict with the local rulers.

#### East India Company in Bengal

- The Company set up its first factory on the banks of the river Hugli in 1651. The factory was not a production unit but a warehouse where the goods for export were stored. The Company convinced the traders and merchants to settle near their factories.
- By 1696, it began building a fort around the settlement. Later, it took the zamindari rights of three villages. One of the villages was Kolkata, which later grew into Calcutta (Kolkata). The Company also forced Aurangzeb to issue a 'farman' granting the Company the right to trade duty-free.
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- The Nawab locked the warehouse, disarmed the Englishmen and marched to Calcutta and established control over the Company's fort.
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Robert Clive played an important role in establishing supremacy of the Company in India

## Results

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## The Battle of Buxar

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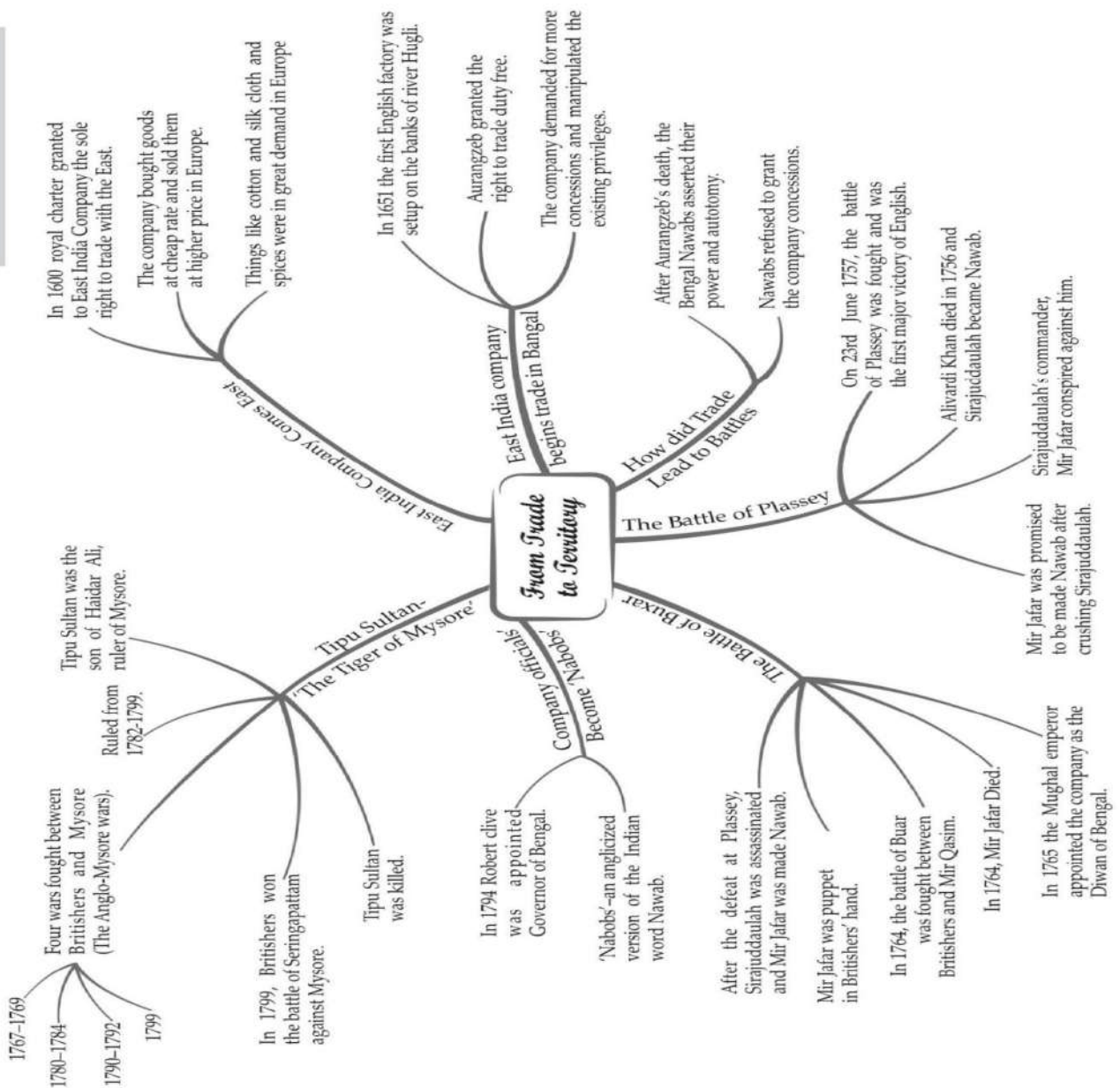
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# MIND MAP : LEARNING MADE SIMPLE CHAPTER-2



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- |      |       |        |       |
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**Lets Discuss (Page NO. 25)**

Q4. European trading companies were looking for new lands from which they could buy goods at cheap prices and carry them back to Europe to sell at high prices. The fine qualities of cotton & silk produced in India had a big market in Europe. Indian spices like pepper, cloves, cardamom & cinnamon too were in great demand. Hence, European trading companies were attracted to India,

Q5. After the death of Aurangzeb the Bengal nawabs asserted their power and autonomy. Through the 18<sup>th</sup> century, the conflicts between them and the East India company intensified. The nawabs refused to grant the company concessions, demanded large tributes, denied it the right to mint coins, and stopped it from extending its fortifications. They claimed that the company was depriving the Bengal govt. of huge amounts of revenue, and also undermining their authority by refusing to pay taxes. Writing disrespectful letters and humiliating them and their officials.

On its part, the company declared that to trade was getting ruined because of the demand of the local officials. It is believed that trade could only flourish if the duties were removed. To expand trade, it wanted to enlarge its settlements buy up villages, & rebuild its forts.



Q6. By the assumption of diwani the British got control over the revenue of Bengal as they got revenue they could easily buy the cotton and silk textiles, pepper, cardamom & cloves, they could maintain their own troops & built forts & company offices.

Subsidiary alliance is an alliance between a dominant nation and a nation that it dominates.

Q7. This policy was introduced by Lord Wellesley. According to this policy, the rulers were not allowed to have their own independent army. The British provided them with armed forces & in return the ruler had to pay for the subsidiary forces, If the ruler failed to pay the taxes, a part of his territory was annexed as a fine. Example Awadh & Hyderabad were taken away with this alliance.

Q8.a) British territories were broadly divided into administrative units called presidencies. Three presidencies like Bengal, Madras, Bombay whereas under the Indian ruler 1 administration was divided into 4 parts – District (Zila), Paragana, Tehsil & villages.

b) The supreme head of the administration was the governor – general, whereas under the Indian administration system the supreme head was king or Nawabs.

c) Warren Hastings introduced the new system of justice each district was to have two courts. Civil & criminal court.

d) The European district collected presided over civil court. The criminal courts were still under a Qazi and a Mufti under the regulating act of 1773, a new supreme court was established.

The main figure in Indian district was collector.

f) According to his title collector, his main job was to collect the revenue and the taxes & maintain law & order in his district with the help of judges police officers & darogas

Q9.i. According to the Indian caste only 'khatriya' were allowed to work in their army but the British company trained common peasants to become soldiers.

ii. There was a change in the company's warfare technology where cavalry system of army was declined and infantry requirement became more important.

iii. The soldiers were subjected to European style training drill and discipline.

iv. The caste & community feeling in the army & between the soldiers was totally ignored.

# HISTORY

## Chapter 1: Introduction How, When and Where



**8th**

## INTRODUCTION HOW, WHEN AND WHERE

### Dates in History

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Since long history has been associated with dates. It was because historians and people were mostly concerned with political history emphasising over a king's birth, his coronation, his political and social policies and the wars which were fought during his reign. Dates were therefore necessary to describe the duration and important policies carried out during his reign.

Although dates and the chronology of events are important, it is significant to understand that history as a subject goes beyond political history. It has many dimensions such as the changes in society which took place over a period of time, scientific and technological developments, environmental and forest degradation, loss of tribal autonomy and expansion of agriculture. These events happened over a long period of time, and thus, a single date cannot be attributed to the changes which spanned over a long stretch of time.

Thus, though dates are still important, historians have begun to write about subjects apart from the kings. For example, how people earned their living, the development of towns and cities, and the formation of kingdoms.

#### **Which are Important Dates?**

Dates become important when we focus on a particular set of events. When events change, new dates become important. For example, for the British historians, the rule of each Governor General was significant. So, the history of British India revolved around the Governor Generals and their achievements. They hardly gave importance to the events which occurred outside this purview. Thus, the importance of the set of dates changes according to the events which are highlighted by the people.

The dates we select and compose our story of the past are not important. They become vital because we focus on a particular set of events as significant. The chronology of different personalities' lives marked the different chapters of the history of British India. It is to give each chapter some coherence. It is to tell a story in a way that makes some sense and can be followed.

#### **Sources of History**

Main sources of colonial history are

**What is colonial?** By reading this chapter you will understand how the British came to

conquer the country and establish their rule, subjugating local nawabs and rajas. How they established control over the economy and society, collected revenue to meet all their expenses, bought the goods they wanted at low prices, produced crops they needed for export, and you will understand the changes that came about as a consequence. You will get to learn about the changes British rule brought about in values and tastes, customs and practices. When the subjugation of one country by another leads to these kinds of political, economic, social and cultural changes, it is referred to as colonisation.

1. When the subjugation of one country by another country leads to change in social, culture, economic and political sphere, it leads to colonization .
2. British rule brought about changes in values and tastes, customs and practices.

### **Administrative Records**

- Official records of the British administration are an important source of history during this period. The British documented every plan, policy, agreement and investigation. They also preserved documents and letters.
- During the colonial rule, all administrative offices such as the Collectorate , the tahsildar's office, the commissioner's office, the provincial secretariats and the law courts had their own record rooms where all official proceedings and letters of conversations moving from one department to the other were recorded.
- These documents were skillfully copied in the early years by calligraphists. With the spread of printing by the mid-nineteenth century, each document came to be printed by the government department.
- The national Archives of India was established in the 1920s at Delhi. Government records, documents and letters were accumulated.

### **Surveys**

- The British carried out various surveys of the countries which they ruled. By the beginning of the nineteenth century, various surveys were carried out related to the size of the territories in addition to revenue surveys. Besides, the flora, fauna, local histories and cropping patterns were surveyed.
- The British also began to conduct the population census of India which was held after every ten years. It also included information on castes and religions.

- The British preserved the official documents so that important data and recordings could be studied, debated and used as a point of reference in the future.
- Many other surveys such as zoological surveys, archaeological surveys and forest surveys were also conducted.

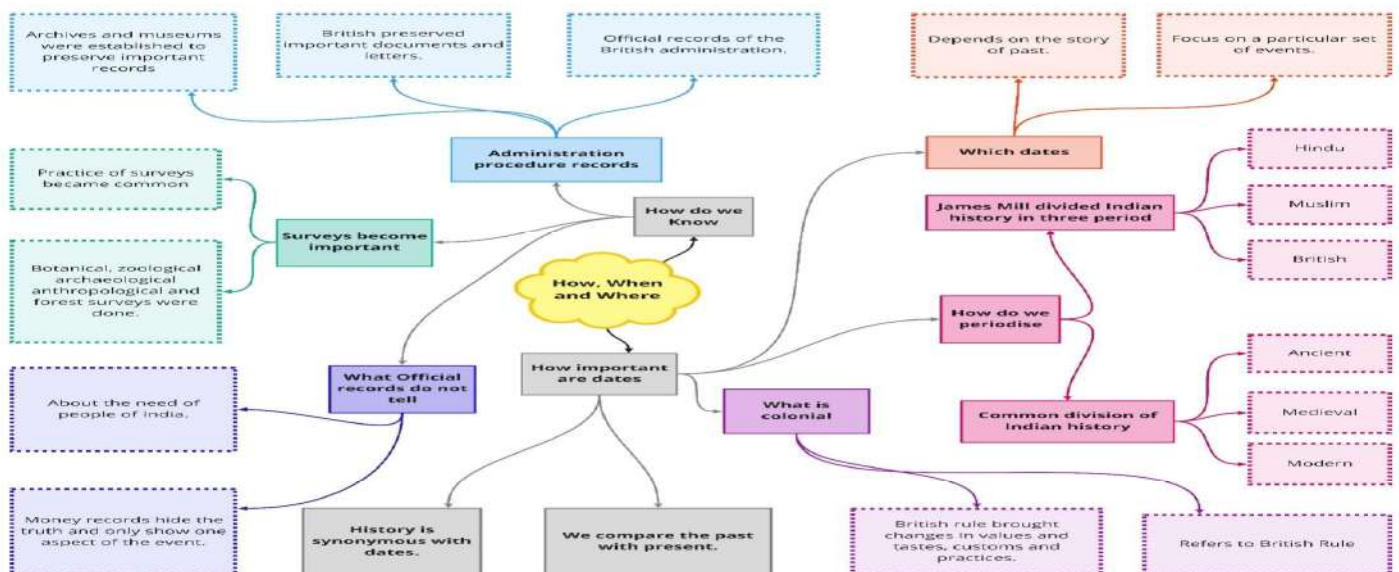
### Limitations of the Official Records

- Because these surveys and records were conducted by the British, they reflect colonial thoughts and ideologies.
- These records only tell us about what the British officials thought about the people, their culture and languages. Thus, these records do not tell us about the general notions of the people, their beliefs and ideologies.

### Other Sources of the Period

- Apart from official records, there are many other sources which are available in plenty such as people's diaries, accounts of pilgrims, pamphlets, popular booklets, newspapers, speeches of leaders and writings of the poets and novelists. These sources tell us about the general feelings of the people of the country.
- However, a vast majority of people in India were not literate. Tribals, mine workers, factory workers and sweepers could not record their histories. We largely come to know about them through oral histories, traditions and cultural practices.

Class : 8th Social Studies (History)  
Chapter 1 How, When and Where





12. What are the sources of information of the periods?  
 a. Primary sources b. Secondary sources c. Both a and b d. None of these
13. Who was James Mill?  
 a. Indian economist b. Scottish economist c. British economist d. None of these
14. What do you mean by contemporary?  
 a. The term refers to the future period. b. The term refers to the present period.  
 b. The term refers to the past period. d. None of these.
15. What do you mean by Survey?  
 a. A study of Animals b. A study or investigation of important facts  
 b. A study of birds d. None of these

## ANSWER KEY

### Multiple Choice questions-

- 1.(d) James Mill 2. (c) Surveying 3. (a) 1920 4. (b) Caligraphists  
 5. (d) Lord Mountbatten 6. (b) Colonial 7. (c) How markets came up  
 8. (c) Subjugation of one country by another 9. (b) James Rennel 10. (c) Delhi  
 11. (b) First Governor General 12. (c) Both a and b 13. (b) Scottish economist  
 14. (b)The term refers to the present period. 15. (b) A study or investigation of important facts

### Very Short:

- Name the events for which specific dates can be determined.
- What was an important aspect of the histories written by the British historians in India?
- Who was James Mill? 4. What was Mill's opinion about the Asian societies?
- What evil practices, according to James Mill, dominated the Indian social life before the British came to India?
- How did paintings project Governor- General?
- Why do many historians refer to modern period as colonial?
- Mention one important source used by historians in writing about the last 230



years of Indian history.

9. What is done under census? 10. What do official records not tell?
11. Why do we try and divide history into different periods?

### Very Short Answer:

1. The year a king was crowned, the year he married, the year he had a child, the year he fought a particular battle, the year he died, etc.
2. The rule of each Governor-General was an important aspect.
3. He was a Scottish economist and political philosopher and is known for his book A History of British India.
4. In Mill's opinion all Asian societies were at a lower level of civilisation than Europe.
5. According to James Mill, the evil practices that dominated to the Indian social life were religious intolerance, caste taboos and superstitious practices.
6. Paintings projected Governor-Generals as powerful figures.
7. It is because, under British rule people did not have equality, freedom or liberty—the symbols of modernity.
8. The official records of the British administration.
9. It records the number of people living all the provinces of India and gathers information on castes, religions and occupation.
10. Official records do not tell what other people in the country felt, and what lay behind their actions.
11. We do so in order to capture the characteristics of a time, its central features as they appear to us.

### Short Questions:

1. How did James Mill view India?
2. Historians divide Indian history into ancient, medieval and modern. But this division too has its problems. What are these problems?
3. What did the British do to preserve important official documents and letters?
4. What do official records not tell? How do we come to know about them?
5. How did the British conquer India and establish their rule?
6. Moving away from the British classification, how did historians usually divide the history of India?

7. What were the sources used by historians in writing the History at the time of the British rule?

### Short Answer:

**Ans.1:** James Mill did not cherish any positive idea about India. He was of the opinion that all Asian societies were at a lower level of civilisation than Europe. According to his telling of history, before the British came to India, the Hindu and the Muslim despots ruled the country. Religious intolerance, caste taboos and superstitious practices dominated social life. He felt that only British rule could civilise India. He suggested that the British should conquer all the territories of India to ensure the enlightenment and happiness of the Indian people. For India was not capable of progress without the help of the British.

**Ans.2:** This periodisation has been borrowed from the West where the modern period was associated with the growth of all the forces of modernity such as science, reason, democracy, liberty and equality. Medieval was a term used to describe a society where these features of modern society did not exist.

It is difficult for us to accept this characterisation of the modern period. Here, it is worth-mentioning that Indians did not have equality, freedom or liberty under the British rule. The country also lacked economic growth and progress in that period. It is therefore many historians refer to modern period as colonial period.

**Ans.3:** The British felt the need to preserve all the important official documents and letters. For this, they set up record rooms attached to all administrative institutions. The village tahsildar's office, the collectorate, the commissioner's office, the provincial secretariats, the lawcourts—all had their record rooms. The British also established specialised institutions such as archives and museums to preserve important records.

**Ans.4:** Official records do not always help us understand what other people in the country felt, and what lay behind their actions. For that we have diaries of people, accounts of pilgrims and travelers, autobiographies of important personalities, and popular books, etc. that were sold in the local bazaars. With the spread of printing press, newspapers came to be published and issues began to be debated in public. Leaders and reformers wrote to spread their ideas, poets and novelists wrote to express their feelings.

**Ans.5:** The British conquered India in the following ways:

- (a) They subjugated local nawabs and rajas.

(b) They established control over the economy and society collected revenue to meet all their expenses, bought goods they wanted at lower prices and produced crops they needed for export.

(c) They brought changes in rulers and tastes, customs and practices.

(d) Thus, they moulded everything in their favour and subjugated the country very soon.

**Ans.6:** When we move away from the British classification, historians usually divided the Indian history into three categories that are:

1. Ancient
2. Medieval
3. Modern

**Ans.7:** The historians used the following sources in writing the history:

1. The official records of the British administration.
2. The letters and documents that were preserved carefully.
3. Records being preserved from the administration offices.
4. Letters and memory that were kept in the archives.

### Textual Questions

#### Lets Recall (Page No. 8)

1. State whether true or false:  
a. False   b. False   c. True

#### Lets Discuss (Page No. 8)

Q2. James Mill divided Indian history into three periods Hindu, Muslim and British. The periodisation of Indian history on the basis of religion is problematic for several reasons. A variety of faiths apart from Hinduism and Islam existed in the periods categorized as Hindu and Muslim by Mill. Also, it is not right to classify an age according to the religion of the rulers of the time. To do so would suggest the lives and practices of others do not really matter. Also the rulers do not share the same faith.

Q3. The British felt the need to preserve all the important letters and documents. They set up record rooms attach to all the administrative institutions, Tehsildar's office, collectorate office, secretariat law courts etc. They also established special institution like archives and museums to preserve important documents.

Q4. The information historians get from old newspapers is different from that found in police reports because the news published in newspapers is more correct than the details in the police report. The police were nearly puppets of the British govt. and recorded details in their favour.

## سبق ۴:- دبدرائی

سوال ۱: لفظ تہ معنی

۱	مٹھ مٹھ دین	شاباشی دنی	۲	کنہ لہڈ	یُس لگہ ہنزن کتھن کن توتھ پڑھ کر
۳	دل از آری	دو کھ دین	۴	ولی و عہد	سُہ یُس بادشاہ ہنزن جاے رٹن وول آسہ
۵	مارموت	لول۔ امار	۶	و قز و انز	یزتھ وائلن
۷	پلڈگی	چچہ گری	۸	واٹجہ وٹھ گوتھن	بھیرن
۹	کاٹزرس لگر پھنڈ	نیایے دوٹھن			

سوال ۲: جواب لیکھو:

اج:- راز کھیم گپتس اوس یہ یو ڈغاب زسہ اوس پنڈی اپڈی تارہف بوزتھ خوش گوشان تہ تارہف کرن وائلس اوس ینا مویتز سو نہ سادو کران۔ سہ اوس کنہ لہڈ تہ پیہ اوس کتھن واش کڈنے تمں پٹھ عمل کران۔

ج ۲:- راز کھیم گپت مو دہولہ بیج بہار تہ۔

ج ۳:- دبدرائہ پتو او مو کھ حکومت کام کار پانہ چلاؤن تکنا زکی سٹند نیوا بھمیو اوس نابالغ او کنی ہیکہ ہانہ سہ حکومت یانہ چلاؤتھ۔

ج ۴:- حالاتھ کا پانہ مو کھ تہ تختس راز چھ کرنہ با پتھ پتو دبدرائہ سبھاہ ہیکن تہ جھکن تمہ بیہو و نابالغ ابھمیو، تختس تہ پانہ لُج حکومت کام کار چلاؤن۔

ج ۵:- دبدرائی آس آ خری وری یں منز سنگدلی تراؤتھ مذہبی کامہ کران تہ لوکن ہنزن بجائی خاطر جکھان تمہ گری واریاہ نوک مندر تعمیر۔ دبدرائہ گری واریاہ نوک شہر تہ کام آباد یمن منز لگن پور، ابھمیو، پور تہ دبد پور مشہور آس۔ نار بڑی گڑھنہ پتہ کو رن سری نگر نو سر تعمیر تہ اتہ بناؤن جاپہ جاپہ مندر۔ مسافرن ہند خاطر کرنی سراپہ تہ تعمیر۔

ج ۶:- مرہ بر و نہہ ولی و عہد مقرر کرنہ خاطر پتیس پنہن با پتھ ترن کن نظر۔ اودے راج اوس تمس بوے، تہنڈی نیچری اتناؤن پانس نش یمن بر و نہہ کن دن واریاہ نوک ڈٹھ کر داؤتھ۔ دو پنکھ یس یس اتھلگہ سہ گووکر سٹندے۔ اوس شرس اوس ناو سنگرام راج باقے شری لگو پانہ وائی ژونہ تہ سنگرام راجن سومبر آو ساری ژوٹھکی پانس ن ش۔ دبدرائہ پڑتھس ژے کتھ گری سومبر تھ پتہ ژوٹھکی۔ سنگرام راجن وولس باقین شرن ہند ژونہ کنی یہ جواب بوزتھ بنوؤن یو ہے ولی عہد۔

سوال ۳:- یوں کنہ دتھ محاورن ہند معنی لیکھو تہ کرو کھ جملن منز استعمال

۱	لور آسن	کنہ چیرچ دلچسپی آسز	کریم چھ کتابہ پرنس سبھاہ اور
۲	سونہ سادو کرن	مالا مال کرن	رحیم کو رمالی پاس نیرنہ و زونہ سادو
۳	کاٹزرس لگر پھنڈ	نیایے دوٹھن	تمن پیتر با پتھ ترن چھ اکثر لوچکن کتھن پٹھ کاٹزرس لگر پھنڈ
۴	تیل اٹن	پسر اٹن	دبدرائہ آڈی پنڈی دشمن تیل
۵	کن برنی	کانسہ خلاف اپڑوٹن	عادل چھ کر پس خلاف میہ کن بران
۶	کانہ کیل	صد روزن	دبدرائہ اوس پنہن دشمن ہند کانہ کیل
۷	کاڈہن ہر ہر گوتھن	شرارت کھسن	دوستادن چھ پنکن ہندس شور کرنس پٹھ کاڈہن ہر ہر گوتھان
۸	زسمہ بیہناونہ	نکار بناؤن	لوک شری چھ پتھ گریہ چیرس زسمہ بیہناوان
۹	اچھ منز کٹر	نفرت آسز	دبدرائہ آس پنڈی زری اچھ منز کٹر باسان

سوال ۴: خالی جاپہ پڑوونہ کنہ دنہ آمتو شتو اشار ناوتہ تہ۔

۱- تم آہ ۲- ہم آہ ۳- اسہ کھنیو وبتہ۔

سوال ۵: کانبل چھ جگرچ بہاؤری۔ تھہ پٹھکی پڑو خالی جاپہ۔

۱- اتم روز ۲- میوند ۳- سلہ ۴- تراش ۵- انبو

سوال ۶:- زناوتن مقابلہ لیکھو مادناوتی تہ مادناوتن مقابلہ لیکھو زناوتی

شال	شاج	کراں	کراں	کراج	ساجیو	سال
کانڈر	کانڈرین	زامنر	زامنر	کور	گجر	گجرانی
بطخ	بطخ	گوگل	گوگل	گوگ	کوکر	کوکر
لوٹ	لوٹ	پٹھان	پٹھان	چٹھانی	راڑ	راڑی
سون	سوعین	نون	نون	نتر	مہراڑ	مہرتیڑ
نوکر	نوکرانی	گرہٹہ وول	گرہٹہ وول	گرہٹہ وائینر	سکھ	سکھیانی
خاندان	خاندراستری	پادشاہ	پادشاہ	پادشاہ باے	موقدم	موقدم باے
تھاؤل	تھاؤج	گول	گول	گج	ہول	ہول
مام	مامز	بڈبب	بڈبب	نانز	ماسو	ماس
پونز	پونز					

سوال ۷:- ناوتی کرو، کھنملن منز استعمال

۱	ککل	ککل چھے گوان	(مادناوت)
۲	ٹھول	ٹھول چھ طاقی	(زناوت)
۳	نوٹ	نوٹ چھ ووڈل	(زناوت)
۴	ناگ	ناگن منز چھے گاڈ آسان	(زناوت)
۵	ژونٹھ	ژونٹھ چھ مؤڈر تہ مژدار	(زناوت)
۶	آر	آر چھ اکھ مو	(زناوت)
۷	ووڈر	ووڈر چھ آلس منز لینہ یوان	(زناوت)
۸	رؤد	رؤد ستی چھرب ووتھان	(زناوت)
۹	ہاکھ	کشپر منز چھ زیادہ ہاکھ ووپدان	(زناوت)
۱۰	ون	ون چھ جانا وارن ہنر چھین جاے	(زناوت)
۱۱	ہولہ بچ	ہولہ بچ چھے ژمہ ہنر بہماڑ	(مادناوت)
۱۲	کتاب	یہ چھے واریاہ دلچسپ کتاب	(مادناوت)
۱۳	نول	نول چھ خطرناکھ آسان	(زناوت)
۱۴	وآر	اسہ چھے ہاکھ و آرائگنس منز	(مادناوت)
۱۵	ژونگ	ژونگ چھ ژھپتہ گوٹ	(زناوت)

مشکل الفاظ

مٹھ مٹھ دین	لہ لہڈ	دلا زاری لوڈستار	وانچہ وٹھ گوبھن	دل عہد
پلوگر	مارموت	کانہ کیل راڑت	راڑت	وڈر وانی
آچھ منز کٹر	یزتہ والین گائلمین	اپڈر	کاٹوس پگر پھٹ	لرڑ
موت	نیتہ			

## گرامر

کراؤت کیا ہ گوا؟

کراؤت: چھ تھ لفظس ونان۔ تھ منڑ گنہ کلمہ ہنز باؤتھ آسہ تہ تھ منڑ کانہہ نپہ کانہہ زمانہ موہو آسہ مثال۔  
میا کھیووتہ، شری چھ ماؤانس منڑ گندان، سوچھے چاے چوان بیتر۔

س: اشار ناؤت کتھ چھ ونان؟

ج: کاٹسہ شخصہ ہند ناوتہ بدلہ یس ناؤت استعمال سپدسہ گوا "شخہ اشار ناؤت" مثالے: بہ آس، مے، ہم، سہ۔

۲۔ یس اشار ناؤت چیس، شخصس یا جاپہ گن اشار کر سہ گوا "ہاون اشار ناؤت" مثالے: نیہ، ہم، ہم، ہو۔

س: گنہ پیرا گرافس سہل بناوان۔

۱۔ بیم آس ہارنی جوراہ۔ آکس اوس ناوچہ تہ بیس نیہ، نیہ اوس سپد ہول تہ کامل۔ سہ اوس اجی میٹھ ٹوٹی تھوان۔ چہ اوس زیرک تہ جکھن وول۔ گرس منڑ اوسکھ دوہے دند

وژن آسان۔ نیہ اوس نہ چنی کانہہ کتھ مانان۔ اُخر چہ کھ بیون بیون نیون۔ چہ لوگ رتی پٹھی کر کر نیہ اما پو زبیس وول شکسن نال۔

ج: دپان بیم آس باے ز۔ آکس اوس ناوچہ تہ دو بیس اوس ناوچہ۔ نیہ اوس لڑا نیہ گور تہ کامہ ژور۔ سہ اوس اڈی گلکس ٹوٹی تھوان۔ چہ اوس واریاہ محنت وول۔ تمن اوس

دوہے گرس منڑ لڑا نیہ آسان۔ لڑا نیہ ہند کی وجہ تہ در آ نیہ تم دو شوے الگ الگ۔ چہ اوس محنت کرتھ پٹن گر چلاوان تہ نیہ اوس بے کار بہتھ۔

## ﴿سبق: آلودگی﴾

سوال ۱: لفظ تہ معنی وچھو کتھ پٹھ (صفحہ نمبر ۲۲ تا ۲۳)

سوال ۲: جواب لیکھو (صفحہ نمبر ۲۳)

ج ۱: کر کہہ نادچھ امکن مضر تکیا ز اہر ستی چھ کہہ بکس تہ دل چہ ڈبرایہ پٹھ نا کار اثر پوان۔

ج ۲: گاڑن ہند پس پس، تیلی کارٹن ہنز گراپہ ہش آواز، ریڈیو تہ ٹیلی وچنگ شور تہ ٹیپ رکارٹرن ہند گریو ستی چھ شورس منڑ ہر بر سپدان۔

ج ۳: انسان کو رپڑتھ کانہہ شو چیز پٹنہ خود غرضی تہ نادانی ستی اولوڈ۔ گاڈن، ریلین تہ کارخان منڑ پادگشھن وول ہہ چھ سوڑے اؤ ند پوکھ اؤ لوڈ کران تہ بیہ

چھ ہولتہ اولوڈ سپدان۔

ج ۴: انسان چھ ژھوٹھ، گنڈ تہ غلامتھ ڈرک یاون تہ کولن منڑ داؤتھ ووان۔ ہسپتالو منڑ تہ گرو منڑ نیون وول بدروتہ چھ کولن منڑ گتھان۔ تہ پٹھ پٹھی چھ آب

ناصاف گتھان۔

ج ۵: کارخانوتہ گاڈو منڑ نیون وول ہہ گتھ سائیسی طریقو ستی کار پرتن۔ ایسی تھیار بناونہ کین تجرب بن پٹھ گتھ ٹھاکھ لاگنہ یون۔ سار وے کھوتہ ضروری

کام چھے ون رآ چھ راوٹھ کرنی۔ زیاد کھوتہ زیادگی نو وراونی۔ پٹن اؤ ند پوکھ گتھ ناصاف تھاون۔

سوال ۳: یونہ کہہ دنہ آمتو مملو منڑ ژا روہین لفظن ہند کی معناد۔

۱ شری آس زبکھ نہ اوم دود چا وناوان۔ زامت

۲ ژکیا ز جکھ اچھووتہ کھوان؟ چھاو آمت

۳ جاہل انسان چھنہ گاٹل آسان۔ پریہ

۴ اشوڈ سندر جہ تیل چھ صحتہ باپتھ مضر۔ شود

۵ اتول مصالہ دژڈکاندارس واپس۔ تولہ مت

سوال ۴: دنہ آمتو اشار ناوتہ ستی بر وخال جاپہ۔

۱ سہ ۲ گمبس ۳ پرتھ کانہہ ۴ یس، سہ



۵ سُہ، اوس، یُس ۶ پر تھ گائسہ ۷ یم، سائی

سوال ۵: مملن منز لیکھو جواب۔

- آب کیا ز گتھ صاف آسن  
۱ آب چھ چپہ خاطر ضروری۔  
۲ اگر آب گنڈ آسہ آس گتھ ہو ہمار  
۳ گنڈ آب آس گتھ ہمار پھالان۔  
۴ اسہ پز نہ دریا وتہ کولہ ناصاف کرنی۔  
۵ گنڈ آب چپہ آس گتھ اتہم رز گتھان۔  
۶ اگر کولہ ناصاف گتھن یم تھ منز جانو رچھ تم تہ مران  
۷ اسہ پز بیات بہ تیوت آب صاف تھاؤن۔
- ہوا کیا ز گتھ صاف آسن  
ہوا چھ سائہ خاطر واریاہ ضروری۔  
اگر ہوانا صاف تہ اولوڈ گتھ و ما حولس پٹھ چھ براثر پوان۔  
نا صاف ہوا چپہ آس گتھ چھانہ ہنز ہمار لاگر گتھان۔  
گنڈ ہوا آس گتھ جانا وارن، گلبن کٹین پٹھ تہ اثر پوان۔  
گنڈ ہوا چھ سانس ما حولس خراب کران۔  
گنڈ ہوا آس گتھ کیمین تہ کیرن پٹھ تہ اثر پوان۔  
گنڈ ہوا چھ ہر آس جاندارس خاطر صحتہ مضر۔

سوال ۶: ۱ ہران ۲ پیران ۳ یاد ۴ کاکو کتھ ۵ سلی ۶ گندان

سوال ۷: مثال وچھتہ بر و خالی جلیہ۔

۱ گی = اولوڈگی ۲ گی = یوگی ۳ گی = سادگی  
۴ گی = تازگی ۵ گی = واژگی ۶ گی = سرگی

### گرائمر

س: ”غزل کتھ چھ دنان؟“

ج: لفظ غزل لگ معنی چھ محبوب متعلق یا محبوب ہندی خوبصورتی متعلق زان دنپ۔ غزل لگ موضوع ہیکہ کہنیہ تہ آستھ۔ امہ آس گتھ سپد یہ کتھ ژتہس ز غزلہ ہند وزن سپد واریاہ وسیع۔ غزلہ ہندس گوڈنیکس شعرس چھ ”مطلع“ ونان۔ امک دؤ نوے مصرعہ چھ ہم قافیہ آسان۔ غزلہ ہندس ساروی کھوتہ رتس شعرس چھ ”حسن مطلع“ ونان۔ تہ تھے پائٹھو چھ غزلہ ہندی آخری شعرس منز شاعر پنن تخلص ظاہر کران۔ تہ ”مقطع“ ونان چھ۔ کائشس منز چھ واریاہ شاعر و غزلہ منز پنن لول ورتومت۔ کثیر ہندی غزل گو و شاعر چھ ”مبجور“ محمود گامی، رحمان راجی بیتر۔

س: ونہ کین چیزن ہندی ناو؟

ج: ۱۔ گلو گتھ ۲۔ جاناوار ۳۔ جنگلو جانور  
۴۔ جٹی بوٹیاں ۵۔ گو پھ تہ غار ۶۔ جنگلو مپو



# MATHEMATICS

## Chapter 2: Linear Equations in One Variable

8<sup>th</sup>



## Linear Equations in One Variable

- Equation:** An equation is a statement of equality of two algebraic expressions involving one or more unknown quantities.
- Linear equation:** a linear equation which has only one variable is called linear equation in one variable. The highest power of the variable is one.
- An equation involving only a linear polynomial is called a linear equation.

For example:  $\frac{2x}{5} - 4 = \frac{1}{2}, \frac{3t}{2} + \frac{t-7}{3} = 11.$

- Any value of the variable which makes the equation a true statement is called the solution or root of the equation.

For example: - 2 is root of the equation  $3x - 2 = -8.$  as

$$= 3(-2) - 2 = -8,$$

$$= -6 - 2 = -8$$

$$= -8 = -8 \quad \text{L.h.S} = \text{R.h.S}$$

- Any term of an equation may be taken to the other side with its sign changed, without affecting the equality. This process is called transposition.
- Without changing the equality, we may
  - add the same quantity to both sides of the equation.
  - subtract the same quantity from both sides of the equation.
  - multiply both sides of the equation by the same non-zero quantity.
  - divide both sides of the equation by the same non-zero quantity.

- If  $\frac{ax+b}{cx+d} = \frac{p}{q}$ , then  $q(ax + b) = p(cx + d)$

This process is called cross multiplication.

- General form of Linear equation in one variable be  $ax+b=c$  where  $a$  is coefficient of  $X$  and  $b$  &  $c$  are constant.  $A$  is non zero integer,  $b$  &  $c$  are integers.
- Solution:** the value of the variable which makes an equation a true sentence is called the solution of the equation.

### Solving Linear Equations

#### Performing Mathematical Operations on Equations

When we are doing mathematical operations on a linear equation, we should do it on both sides of the equality otherwise the equality won't hold true.

Suppose,  $4x + 3 = 3x + 7$  is a linear equation. If we want to subtract 3 from the given equation, then we do it on both sides of the equality, so that the equality holds true.

$$4x+3 - 3=3x+7-3$$

$$\Rightarrow 4x=3x+4$$

Similarly, if we want to multiply or divide the equation, we multiply or divide all the terms on the left side of the equality and to the right side of the equality by the given number.

## Linear Equations

There are three main methods to solve linear equations. The methods for finding the solution of linear equations are:

- HIT & TRIAL OR ERROR METHOD
- TRANSPOSTION METHOD
- SYSTIMATIC METHEOD

### Hit and Trial or error method

To solve linear equations, in this method we make the equation in General form  $ax+b =c$ ,

After that we put the values in variable in left hand until L.H.S = R.H.S. for example

$$X+5=8$$

$$\text{put } x=1$$

$$1+5=8$$

$$6=8$$

Which is false

$$\text{put } x=2$$

$$2+5=8$$

$$7=8$$

which is false

$$\text{put } x=3$$

$$3+5=8$$

$$8=8$$

which is true

Therefore solution of equation be  $x=3$

### Transposition method

To solve the linear equation, in this method we make the equation in general form  $ax+b =c$ ,

After that shift all constant and coefficient of variable from left side to right, then we got the solution of the equation. But during shifting the terms the positive term get the negative sign and vice versa and multiple coefficients get division and vice versa

$$2x+4=6$$

$$2x=6-4$$

$$2x=2$$

$$x=2/2$$

$$x=1$$

Therefore solution of equation be  $x=1$

### Systematic method

To solve the linear equation, in this method we make the equation in general form  $ax+b =c$ ,

According to the rule for solving an equation by systematic method. If we subtract the same quantity from both sides of the equation, the equality remains unchanged.

$$X+2=4$$

$$x+2-2=4-2$$

$$x=2$$

Therefore solution of equation be  $x=2$

## Applications (Word Problems)

Sum of two numbers is 74. One of the numbers is 10 more than the other. What are the numbers?

Let one of the numbers be  $x$ .

Then the other number is  $x + 10$ .

Given that the sum of the two numbers is 74.

$$\text{So, } x + (x + 10) = 74 \quad \Rightarrow 2x + 10 = 74 \quad \Rightarrow 2x = 74 - 10 = 64 \quad \Rightarrow x = \frac{64}{2} = 32$$

One of the numbers is 32 and the other number is 42.

## Equations Reducible to the Linear Form

$$\frac{x+1}{2x+3} = \frac{3}{8}$$

Multiplying both sides with  $2x + 3$

$$\Rightarrow \frac{x+1}{2x+3} \times (2x+3) = \frac{3}{8} \times (2x+3) \quad \Rightarrow x+1 = \frac{3(2x+3)}{8}$$

Multiplying both sides with 8

$$\Rightarrow 8(x+1) = 3(2x+3) \quad \Rightarrow 8x+8 = 6x+9 \quad \Rightarrow 8x = 6x+9-8 \quad \Rightarrow 8x = 6x+1$$

$$\Rightarrow 8x - 6x = 1 \quad \Rightarrow x = \frac{1}{2}$$

## Reducing Equations to Simpler Form

Simplify the equation  $\frac{6x+1}{3} + 1 = \frac{x-3}{6}$ .

$$\frac{6x+1}{3} + 1 = \frac{x-3}{6}$$

$$\Rightarrow \frac{6(6x+1)}{3} + 6 \times 1 = \frac{6(x-3)}{6} \quad (\text{Multiplying both sides by 6})$$

$$\Rightarrow 2(6x+1) + 6 = (x-3) \quad \Rightarrow 12x+2+6 = x-3 \quad (\text{opening the brackets}) \quad \Rightarrow 12x+8 = x-3$$

$$\Rightarrow 12x - x + 8 = -3 \quad \Rightarrow 11x + 8 = -3 \quad \Rightarrow 11x = -3 - 8 \quad \Rightarrow 11x = -11$$

$\Rightarrow x = -1$  (required solution)

$$\text{LHS: } \frac{6(-1)+1}{3} + 1 = \frac{-6+1}{3} + 1 = \frac{-5}{3} + \frac{3}{3} = \frac{-2}{3}$$

$$\text{RHS: } \frac{(-1)-3}{6} = \frac{-4}{6} = \frac{-2}{3}$$

LHS = RHS

## Introduction to Linear Equations in One Variable

### Variables and Constants

A constant is a value or number that never changes in an expression and it's constantly the same.

A variable is a letter representing some unknown value. Its value is not fixed, it can take any value. On the other hand, the value of a constant is fixed.

For example, in the expression  $4x+7$ , 4 and 7 are the constants and  $x$  is a variable.

## Algebraic Equation

The statement of equality of two algebraic expressions is an algebraic equation. It is of the form  $P=Q$ , where  $P$  and  $Q$  are algebraic expressions.

$6x + 5$  and  $5x + 3$  are algebraic expressions. On equating the algebraic expressions we get an algebraic equation.

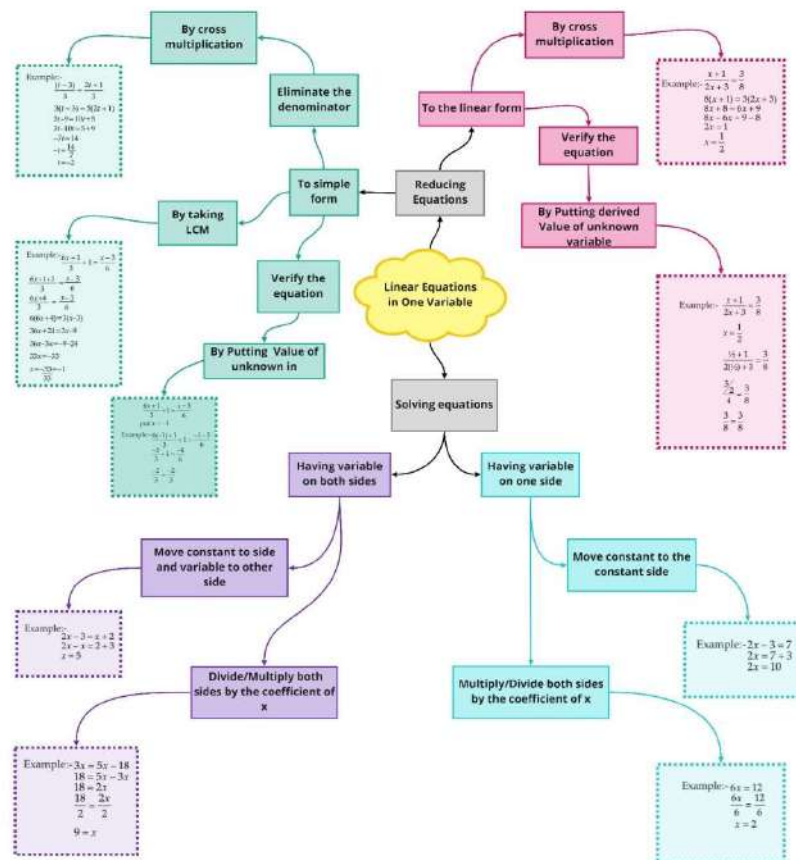
$6x + 5 = 5x + 3$  is an algebraic equation.

## Linear Equations in One Variable

A linear equation is an algebraic equation in which each term is either a constant or the product of a constant and a single variable, where the highest power of the variable is one.

If the linear equation has only a single variable then it is called a linear equation in one variable.

For example,  $7x + 4 = 5x + 8$  is a linear equation in one variable.





## Important Questions

### Multiple Choice Questions:

Question 1. Solve:  $3x = 12$  then value of  $x =$

- (a) 15                      (b) 4                      (c) 9                      (d) 3

Question 2. Sum of two numbers is 95. If one exceeds the other by 15, find the numbers.

- (a) 40 and 60            (b) 50 and 55            (c) 50 and 60            (d) 40 and 55

Question 3. The sum of two-digit number and the number formed by interchanging its digit is 110. If ten is subtracted from the first number, the new number is 4 more than 5 times of the sum of the digits in the first number. Find the first number.

- (a) 46                      (b) 48                      (c) 64                      (d) 84

Question 4. Solve:  $7x = 21$

- (a) 3                      (b) 2                      (c) 14                      (d) none of these

Question 5. The digits of a two-digit number differ by 3. If the digits are interchanged, and the resulting number is added to the original number, we get 143. What can be the original number?

- (a) 85                      (b) 58                      (c) 36                      (d) 76

Question 6. The difference between two whole numbers is 66. The ratio of the two numbers is 2 : 5. What are the two numbers?

- (a) 22 and 88            (b) 44 and 66            (c) 44 and 110            (d) 33 and 99

Question 7. Solve:  $5x - 2(2x - 7) = (3x - 1) + \frac{7}{2}$

- (a) 2                      (b) 3                      (c) 12                      (d)  $\frac{23}{4}$

Question 8. Amina thinks of a number and subtracts  $\frac{5}{2}$  from it. She multiplies the result by 8. The result now obtained is 3 times the same number she thought of. What is the number?

- (a) 2                      (b) 3                      (c) 4                      (d) none of these

Question 9. Solve  $2x - 3 = x + 2$

- (a) 4                      (b) 5                      (c) 3                      (d) 0

Question 10. Find the solution of  $2x - 3 = 7$

- (a) 3                      (b) 4                      (c) 5                      (d) none of these



$2x + 5 = 11$  which is the required linear equation.

4. (a) We have  $4x + 5 = 9$

$$\Rightarrow 4x = 9 - 5 \text{ (Transposing 5 to RHS)}$$

$$\Rightarrow 4x = 4$$

$$\Rightarrow x = 1 \text{ (Transposing 4 to RHS)}$$

(b) We have  $x + \frac{3}{2} = 2x$

$$\Rightarrow \frac{3}{2} = 2x - x$$

$$\Rightarrow x = \frac{3}{2}$$

5. We have  $3\frac{1}{x} \times 5\frac{1}{4} = 17\frac{1}{2}$

$$\Rightarrow \frac{3x+1}{x} \times \frac{21}{4} = \frac{35}{2}$$

$$\Rightarrow \frac{3x+1}{x} = \frac{35}{2} \div \frac{21}{4}$$

(Transposing  $\frac{21}{4}$  to RHS)

$$\Rightarrow \frac{3x+1}{4} = \frac{35}{2} \times \frac{4}{21}$$

$$\Rightarrow \frac{3x+1}{4} = \frac{10}{3}$$

$$\Rightarrow 3(3x+1) = 4 \times 10 \text{ (Cross-multiplication)}$$

$$\Rightarrow 9x + 3 = 40 \text{ (Solving the brackets)}$$

$$\Rightarrow 9x = 40 - 3 \text{ (Transposing 3 to RHS)}$$

$$\Rightarrow 9x = 37$$

$$\therefore x = \frac{37}{9}$$

Hence the required solution is  $x = \frac{37}{9}$

6. We have  $4.4x - 3.8 = 5$

Putting  $x = 2$ , we have

$$4.4 \times 2 - 3.8 = 5$$

$$\Rightarrow 8.8 - 3.8 = 5$$

$$\Rightarrow 5 = 5$$

L.H.S. = R.H.S.

Hence verified.

7.

We have  $\frac{3x}{4} - \frac{2x+5}{3} = \frac{5}{2}$

LCM of 2, 3 and 4 = 12

$$\therefore \frac{3x}{4} \times 12 - \frac{2x+5}{3} \times 12 = \frac{5}{2} \times 12$$

(Multiplying both sides by 12)

$$\Rightarrow 3x \times 3 - (2x + 5) \times 4 = 5 \times 6$$

$$\Rightarrow 9x - 8x - 20 = 30 \text{ (Solving the bracket)}$$

$$\Rightarrow x - 20 = 30$$

$$\Rightarrow x = 30 + 20 \text{ (Transposing 20 to RHS)}$$

$$\Rightarrow x = 50$$

Hence  $x = 50$  is the required solution.

8. Let the angles of a given triangle be  $2x^\circ$ ,  $3x^\circ$  and  $4x^\circ$ .

$$2x + 3x + 4x = 180 \text{ (}\because \text{ Sum of the angles of a triangle is } 180^\circ\text{)}$$

$$\Rightarrow 9x = 180$$

$$\Rightarrow x = 20 \text{ (Transposing 9 to RHS)}$$

Angles of the given triangles are

$$2 \times 20 = 40^\circ$$

$$3 \times 20 = 60^\circ$$

$$4 \times 20 = 80^\circ$$

9. Let one of the two numbers be  $x$ .

Other number =  $11 - x$ .

As per the conditions, we have

$$x - (11 - x) = 5$$

$$\Rightarrow x - 11 + x = 5 \text{ (Solving the bracket)}$$

$$\Rightarrow 2x - 11 = 5$$

$$\Rightarrow 2x = 5 + 11 \text{ (Transposing 11 to RHS)}$$

$$\Rightarrow 2x = 16$$

$$\Rightarrow x = 8$$

Hence the required numbers are 8 and  $11 - 8 = 3$

# MATHEMATICS

## Chapter 1: Rational Numbers



8<sup>th</sup>

## Rational Numbers

### Introduction to Rational Numbers

The numbers which are involved in many mathematical applications such as addition, subtraction and multiplication which are inherently closed with many mathematical processes are called Rational numbers.

### Whole Numbers and Natural Numbers

Natural numbers are set of numbers starting from 1 counting up to infinity. The set of natural numbers is denoted as 'N'. Whole numbers are set of numbers starting from 0 and going up to infinity. So basically they are natural numbers with the zero added to the set. The set of whole numbers is denoted as 'W'.

**Closure Property** Closure property is applicable for whole numbers in the case of addition and multiplication while it isn't in the case for subtraction and division. This applies to natural numbers as well.

**Commutative Property** Commutative property applies for whole numbers and natural numbers in the case of addition and multiplication but not in the case of subtraction and division. **Associative Property** Associative property applies for whole numbers and natural numbers in the case of addition and multiplication but not in the case of subtraction and division.

### Integers

In simple terms Integers are zero and natural numbers and their negatives. The set of Integers is denoted as 'Z' or 'I' **Closure Property** Closure property applies to integers in the case of addition, subtraction and multiplication but not division.

**Commutative Property** Commutative property applies to integers in the case of addition and multiplication but not subtraction and division. **Associative Property** Associative property applies to integers in the case of addition and multiplication but not subtraction and division.

### Rational Numbers

A rational number is a number that can be represented as a fraction of two integers in the form of  $\frac{p}{q}$ , where q must be non-zero. The set of rational numbers is denoted as Q.

For example:

$$\frac{-5}{7}, \frac{0}{4}, \frac{1}{8}$$

written as  $\frac{2}{1}$

where 2 and 1 are integers.

## Properties of Rational Numbers

### Closure Property of Rational Numbers

For any two rational numbers  $a$  and  $b$  ( $a + b$ ) =  $c \in \mathbb{Q}$  i.e. For two rational numbers say  $(a)$  and  $(b)$  the results of addition, subtraction and multiplication operations gives a rational number. Since the sum of two numbers ends up being a rational number, we can say that the closure property applies to rational numbers in the case of addition.

For example: The sum of  $\frac{2}{3} + \frac{3}{4} = \frac{(8+9)}{12} = \frac{17}{12}$

is also a rational number where 17 and 12 are integers. The difference between two rational numbers result in a rational number. Therefore, the closure property applies for rational numbers in the case of subtraction.

For example: The difference between  $\frac{4}{5} - \frac{3}{4} = \frac{(16-15)}{20} = \frac{1}{20}$

is also a rational number where 1 and 20 are integers. The multiplication of two rational numbers results in a rational number. Therefore we can say that the closure property applies to rational numbers in the case of multiplication as well.

For example: The product of  $\frac{1}{2} \times \frac{-4}{5} = \frac{-4}{10} = \frac{-2}{5}$

which is also a rational number where -2 and 5 are integers. In the case with division of two rational numbers, we see that for a rational number  $a$ ,  $a \div 0$  is not defined. Hence we can say that the closure property does not apply for rational numbers in the case of division.

### Commutative Property of Rational Numbers

For any two rational numbers  $a$  and  $b$  ( $a \times b$ ) = ( $b \times a$ ) i.e., Commutative property is one where in the result of an equation must remain the same despite the change in the order of operands. Given two rational numbers  $a$  and  $b$ ,  $(a+b)$  is always going to be equal to  $(b+a)$ . Therefore, addition is commutative for rational numbers.

For example:  $\frac{2}{3} + \frac{4}{3} = \frac{4}{3} + \frac{2}{3} \Rightarrow \frac{6}{3} = \frac{6}{3}$

Considering the difference between two rational numbers  $a$  and  $b$ ,  $(a-b)$  is never the same as  $(b-a)$ . Therefore, subtraction is not commutative for rational numbers.

For example:  $\frac{2}{3} - \frac{4}{3} = \frac{-2}{3}$



Whereas  $\frac{4}{3} - \frac{2}{3} = \frac{2}{3}$

When we consider the product of two rational numbers  $a$  and  $b$ ,  $(a \times b)$  is the same as  $(b \times a)$ . Therefore, multiplication is commutative for rational numbers.

For example:  $\frac{2}{3} \times \frac{4}{3} = \frac{8}{9}$        $\frac{4}{3} \times \frac{2}{3} = \frac{8}{9}$

Considering the division of two numbers  $a$  and  $b$ ,  $(a \div b)$  is different from  $(b \div a)$ . Therefore, division is not commutative for rational numbers.

For example:  $2 \div 3 = \frac{2}{3}$  is definitely different from  $3 \div 2 = \frac{3}{2}$

### Associative Property of Rational Numbers

For any three rational numbers  $a, b$  and  $c$ ,  $(a \times b) \times c = a \times (b \times c)$ . i.e., Associative property is one where the result of an equation must remain the same despite a change in the order of operators. Given three rational numbers  $a, b$  and  $c$ , it can be said that:  $(a+b)+c = a+(b+c)$ . Therefore, addition is associative.  $(a-b) - c \neq a-(b-c)$ . Because  $(a-b)-c = a - b - c$  whereas  $a-(b-c) = a - b + c$ . Therefore, we can say that subtraction is not associative.  $(a \times b) \times c = a \times (b \times c)$ . Therefore, multiplication is associative.  $(a \div b) \div c \neq (a \div b) \div c$ . Therefore, division is not associative.

### Distributive Property of Rational Numbers

Given three rational numbers  $a, b$  and  $c$ , the distributivity of multiplication over addition and subtraction is respectively given as:  $a(b+c) = ab+ac$  and  $a(b-c) = ab - ac$

## Negatives and Reciprocals

### Negative of a Number

For a rational number  $\frac{a}{b}$

$$\frac{a}{b} + 0 = \frac{a}{b}$$

i.e., when zero is added to any rational number the result is the same rational number. Here '0' is known as additive identity for rational numbers. If

$\left(\frac{a}{b}\right) + \left(-\frac{a}{b}\right) = \left(-\frac{a}{b}\right) + \left(\frac{a}{b}\right) = 0$ , then it can be said that the additive inverse or negative of a rational number  $\frac{a}{b}$  is  $-\frac{a}{b}$ . Also  $= \frac{-a}{b}$

For example: The additive inverse of  $\left(\frac{-21}{8}\right)$  is  $-\left(-\frac{21}{8}\right) = \left(\frac{21}{8}\right)$

### Reciprocal of a Number

For any rational number  $\frac{a}{b}$

$$\frac{a}{b} \times 1 = \frac{a}{b}$$

i.e., When any rational number is multiplied by '1' the result is the same rational number. Therefore '1' is called multiplicative identity for rational numbers. If

$\frac{a}{b} \times \frac{c}{d} = 1$ , then it can be said that  $\frac{c}{d}$  is reciprocal or the multiplicative inverse of a rational number  $\frac{a}{b}$

Also  $\frac{a}{b}$  is reciprocal or the multiplicative inverse of a rational number  $\frac{c}{d}$

For example: The reciprocal of  $\frac{2}{3}$  is  $\frac{3}{2}$  As  $\frac{2}{3} \times \frac{3}{2} = 1$

### Representing Rational Numbers on a Number Line

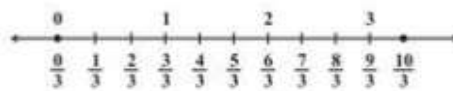
#### Representation of Rational Numbers on the Number Line

In order to represent a given rational number, where  $a$  and  $n$  are integers, on the number line:

**Step 1:** Divide the distance between two consecutive integers into 'n' parts.

For example: If we are given a rational number  $\frac{2}{3}$ , we divide the space between 0 and 1, 1 and 2 etc. into three parts.

**Step 2:** Label the rational numbers till the range includes the number you need to mark



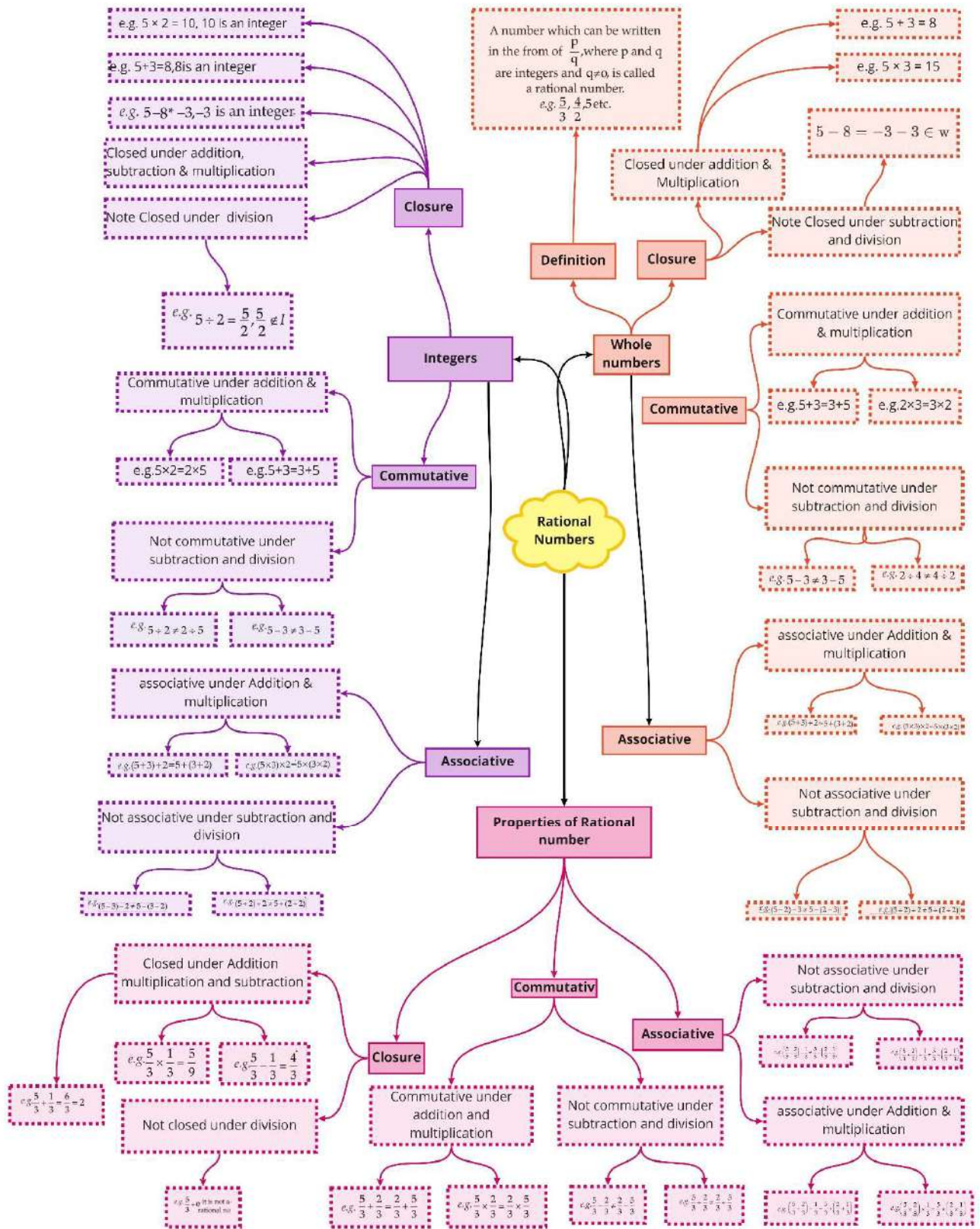
Similar steps can be followed for negative rational numbers by repeating the steps towards negative direction.

#### Rational Numbers between Two Rational Numbers

The number of rational numbers between any two given rational numbers aren't definite, unlike that of whole numbers and natural numbers.

For example: Between natural numbers 2 and 10 there are exactly 7 numbers but between

$\frac{2}{10}$  and  $\frac{8}{10}$  there are infinite numbers that could exist. Method 1 Given two rational numbers, ensure both of them have the same denominators. Once there is a common denominator, we can pick out any rational number that lies in between. Method 2 Given two rational numbers, we can always find a rational number between them by calculating their mean or midpoint



## Important Questions

### Multiple Choice Questions:

Question 1. Which of the following forms a pair of equivalent rational numbers?

- a.  $\frac{24}{40}$  and  $\frac{35}{50}$     b.  $\frac{-25}{35}$  and  $\frac{55}{-37}$     c.  $\frac{-8}{15}$  and  $\frac{-24}{48}$     d.  $\frac{9}{72}$  and  $\frac{-3}{21}$

Question 2. Which number is in the middle if  $\frac{-1}{6}$ ,  $\frac{4}{9}$ ,  $\frac{6}{-7}$ ,  $\frac{2}{5}$  and  $\frac{-3}{4}$  arranged in descending order?

- a.  $\frac{2}{5}$     b.  $\frac{4}{9}$     c.  $\frac{-1}{6}$     d.  $\frac{-6}{7}$

Question 3. Find the multiplicative inverse of -13.

- a. 13    b. -13    c.  $\frac{-1}{13}$     d. 12

Question 4. Which of the following statements is true?

- (a) Every fraction is a rational number.  
(b) Every rational number is a fraction.  
(c) Every integer is a rational number.  
(d) Both (a) and (c).

Question 5. Which of the following is the identity element under addition?

- (a) 1    (b) -1    (c) 0    (d) None of these

Question 6. What is the additive inverse of  $\frac{-2}{3}$ ?

- (a) 0    (b) 1    (c)  $\frac{2}{3}$     (d)  $\frac{-2}{3}$

Question 7. Write the additive inverse of  $\frac{4}{5}$ .

- (a) 1    (b)  $\frac{-4}{5}$     (c)  $\frac{4}{5}$     (d) 0

Question 8. Which among the following is a rational number equivalent to  $\frac{-5}{-3}$ ?

- a.  $\frac{-25}{15}$     b.  $\frac{25}{-15}$     c.  $\frac{25}{15}$     d.  $\frac{-25}{30}$

Question 9. Which of the following is the reciprocal of the reciprocal of a rational number?

- (a) -1    (b) 1    (c) 0    (d) The number itself

Question 10. How is  $\frac{-28}{84}$  expressed as a rational number with numerator 4?

- a.  $\frac{4}{7}$     b.  $\frac{-4}{12}$     c.  $\frac{4}{12}$     d.  $\frac{4}{-7}$

### Very Short Questions:

1. Pick up the rational numbers from the following numbers.

$$\frac{6}{7}, \frac{-1}{2}, 0, \frac{1}{0}, \frac{100}{0}$$

2. Find the reciprocal of the following rational numbers:

a.  $\frac{-3}{4}$       b. 0      c.  $\frac{6}{11}$       d.  $\frac{5}{-9}$

3. Write two such rational numbers whose multiplicative inverse is same as they are.

4. What properties, the following expressions show?

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

$$(ii) \frac{1}{3} \times \frac{2}{3} = \frac{2}{3} \times \frac{1}{3}$$

5. What is the multiplicative identity of rational numbers?

6. What is the additive identity of rational numbers?

7. If  $a = \frac{1}{2}$ ,  $b = \frac{3}{4}$ , verify the following:

(i)  $a \times b = b \times a$

(ii)  $a + b = b + a$

8. Multiply  $\frac{5}{8}$  by the reciprocal of  $\frac{-3}{8}$

9. Find a rational number between  $\frac{1}{2}$  and  $\frac{1}{3}$

10. Write the additive inverse of the following:

a.  $\frac{-6}{7}$       b.  $\frac{101}{213}$

### Answer Key-

### Multiple Choice Questions:

1. (b)  $\frac{-25}{35}$  and  $\frac{55}{-77}$

2. (c)  $\frac{-1}{6}$

3. (c)  $\frac{-1}{13}$

4. (d) Both (a) and (c).

5. (c) 0

6. (c)  $\frac{2}{3}$

7. (b)  $\frac{-4}{5}$   
 8. (c)  $\frac{25}{15}$   
 9. (d) The number itself  
 10. (b)  $\frac{-4}{12}$

### Very Short Answer :

1. Since rational numbers are in the form of  $\frac{a}{b}$  where  $b \neq 0$ .  
 Only  $\frac{6}{7}$ ,  $\frac{-1}{2}$  and 0 are the rational numbers.
2. (a) Reciprocal of  $\frac{-3}{4}$  is  $\frac{-4}{3}$   
 (b) Reciprocal of 0, i.e.  $\frac{1}{0}$  is not defined.  
 (c) Reciprocal of  $\frac{6}{11}$  is  $\frac{11}{6}$   
 (d) Reciprocal of  $\frac{5}{-9} = \frac{-9}{5}$
3. Reciprocal of 1 =  $\frac{1}{1} = 1$   
 Reciprocal of  $-1 = \frac{1}{-1} = -1$   
 Hence, the required rational numbers are -1 and 1.
4. (i)  $\frac{2}{3} + \frac{4}{5} = \frac{4}{5} + \frac{2}{3}$  shows the commutative property of addition of rational numbers.  
 (ii)  $\frac{1}{3} \times \frac{2}{3} = \frac{2}{3} \times \frac{1}{3}$  shows the commutative property of multiplication of rational numbers.
5. 1 is the multiplication identity of rational numbers.  
 6. 0 is the additive identity of rational numbers.

7. Given that  $a = \frac{1}{2}$  and  $b = \frac{3}{4}$

$$(i) a \times b = b \times a$$

$$\Rightarrow \frac{1}{2} \times \frac{3}{4} = \frac{3}{4} \times \frac{1}{2}$$

$$\text{LHS} = \frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$$

$$\text{RHS} = \frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$$

Thus,  $a \times b = b \times a$ . (Verified)

$$(ii) a + b = b + a$$

$$\Rightarrow \frac{1}{2} + \frac{3}{4} = \frac{3}{4} + \frac{1}{2}$$

$$\text{LHS} = \frac{1}{2} + \frac{3}{4} = \frac{5}{4}$$



8.

$$\text{Reciprocal of } \frac{-3}{8} = \frac{-8}{3}$$

$$\therefore \frac{5}{\cancel{8}^1} \times \frac{-\cancel{8}^1}{3} = \frac{-5}{3}$$

9. Rational number between

$$\begin{aligned} \frac{1}{2} \text{ and } \frac{1}{3} &= \left( \frac{1}{2} + \frac{1}{3} \right) \times \frac{1}{2} \\ &= \left( \frac{3+2}{6} \right) \times \frac{1}{2} = \frac{5}{6} \times \frac{1}{2} = \frac{5}{12} \end{aligned}$$

Thus, a rational number between  $\frac{1}{2}$  and  $\frac{1}{3}$  is  $\frac{5}{12}$ .

10.

(a) Additive inverse of  $\frac{-6}{7} = -\left(\frac{-6}{7}\right) = \frac{6}{7}$

(b) Additive inverse of  $\frac{101}{213} = \frac{-101}{213}$



## سبق: حمد

سوال ۱:	الفاظ	معنی	جملے
۱	کون مکان	زمین اور آسمان	اللہ تعالیٰ کون و مکان کا مالک ہے
۲	بن مانگے	مانگنے کے بغیر	اللہ تعالیٰ بن مانگے دینے والے ہیں
۳	آن بان	شان و شوکت والے	سب آن بان والے اللہ تعالیٰ کے در پر جھکتے ہیں
۴	رحیم	رحم کرنے والا	اللہ تعالیٰ رحیم ہے
۵	یوم جزا	قیامت کا دن	اللہ تعالیٰ یوم جزا کا مالک ہے

## تشریح

- ۱ حمد و ثنا ہوتیری ----- تو رحمت نشان والے
- ج یہ نظم محمد اسماعیل میرٹھی نے لکھی ہے۔ وہ اس نظم میں اللہ تعالیٰ کی تعریف کرتے ہوئے فرماتے ہیں کہ وہ زمین اور آسمان کا مالک ہے اور دونوں عالم کا پالنے والا ہے۔ شاعر فرماتے ہیں کہ اللہ مانگنے کے بغیر ہی سب کچھ دیتے ہیں اور سارے شان و شوکت والے اللہ ہی کے در پر جھکتے ہیں اور بے شک اللہ رحم کرنے والے ہیں۔ اور ہر ایک چیز میں اللہ ہی کی رحمت ظاہر ہوتی ہے۔
- ۲ یوم جزا کا مالک ----- او آسمان والے
- ج دوسرے بند میں شاعر فرماتے ہیں کہ اللہ قیامت کے دن کا مالک ہے۔ اور ہم اللہ ہی کو سجدے کرتے ہیں اور مدد مانگتے ہیں کیونکہ اللہ ہی مددگار ہے اور ہم اللہ سے دعا کرتے ہیں کہ ہمیں سیدھا راستے دکھائے۔
- ۳ وہ راستہ دکھا تو ----- جو عز و شان والے
- ج تیسرے بند میں شاعر فرماتے ہیں کہ اے اللہ! ہمیں وہ راستہ دکھا جس راستے پر تمہارے نیک بندے چلتے ہیں اور ان لوگوں کا راستہ جن کو آپ سے نعمت ملتی تھی اور جن کا نام اب تک زندہ اور جو آپ کی نظر میں عزت اور شان والے ہیں۔
- ۴ معتبوب ہیں جو تیرے ----- اے آسمان والے
- ج آخری بند میں محمد اسماعیل میرٹھی لکھتے ہیں کہ اے اللہ! ہم کمزوروں کو ان کا راستہ نہیں دکھانا جو عذاب کے لائق ہیں جو آپ کے بتائے ہوئے راستے سے بھٹک گئے ہیں۔ شاعر فرماتے ہیں کہ اے اللہ! ہم پر رحم کیجیے اور ہماری یہ دعا قبول فرمائیے۔

## سوال جوابات

- ج شاعر نظم میں خدا سے ہدایت کی دعا مانگتا ہے اور گمراہ ہوئے لوگوں کے راستے سے اُسے دور رکھنے کی التجا کرتا ہے اور آخر میں اس دعا کے قبول ہونے کی التجا کرتا ہے۔
- ج خدا کی نظر میں وہی لوگ شان و شوکت والے ہیں جنہوں نے اپنی زندگی تقویٰ اور پرہیزگاری کے ساتھ گزاری۔
- ج شاعر اللہ تعالیٰ سے مدد مانگتا ہے۔
- ج نظم کے آخری مصرع میں شاعر نے گمراہ ہوئے لوگوں کے راستے سے دور رکھنے کی التجا کی ہے اور اس دعا کے قبول ہونے کی التجا کی ہے۔
- سوال ۳: خالی جگہوں کو بھر لیجئے۔

- ۱- آن بان      ۲- سہارا      ۳- نام، عالم      ۴- یارب

## سبق:۔ کاہلی

سوال ۱:	الفاظ	معنی	جملے
۱	قوی	قوت کی جمع	دلی قوی کو بیکار چھوڑ دینا سب سے بڑی کاہلی ہے
۲	قمار بازی	جو اکیلنا	قمار بازی بہت بڑا گناہ ہے
۳	مست	مست	مست کا مست

سوال ۲: سوال جوابات

- ج سرسید احمد خان کے خیال میں سب سے بڑی کاہلی دلی قوی کو بیکار چھوڑ دینا ہے۔
- ج وہ لوگ جو روزانہ محنت اور مشقت سے اپنی بسراوقات کا سامان مہیا کرتے ہیں، وہ لوگ بہت کم کاہل ہوتے ہیں۔
- ج جب انسان محنت اور مشقت کے کام کو چھوڑ دیتا ہے اور بغیر محنت اس کی ضروریات پوری ہوتی رہتی ہیں۔ نیز وہ اپنے دلی قوی کو بیکار چھوڑ دیتا ہے تو وہ انسان بالکل کاہل اور حیوان صفت ہو جاتا ہے۔
- ج اگر انسان اپنے دلی قوی کو بیکار ڈال دے تو اُس کا یہی حال ہوگا کہ وہ شراب نوشی اور مزیدار کھانا پسند کرے گا، قمار بازی اور تماش بینی کا عادی ہوگا اور وہ وحشی بن جائیگا۔
- ج ہماری قوم کی حالت تب بہتر ہو سکتی ہے جب ہم تو اے قلبی اور قوت عقلی کو کام میں لانے کی فکر کریں گے اور کوشش میں رہیں گے کہ ہماری اپنی تمام ضروریات ہم خود پوری کر سکیں۔ ہر وقت دل و دماغ سے کام لیتے رہیں تو ہماری قوم کی حالت بہتر ہو سکتی ہے۔
- نیچے دیے ہوئے الفاظ کے متضاد لکھیے

ضد	الفاظ	ضد	الفاظ	ضد	الفاظ
غیر مناسب	مناسب	بیرونی	اندرونی	چستی	سُستی
باسلیقہ	بدسلیقہ	بدتری	بہتری	یقین	شک
		غیر ضروری	ضروری	دائمی	عارضی

جملوں میں استعمال کیجئے

- بسراوقات :- جو لوگ محنت و مشقت سے اپنی بسراوقات کا سامان مہیا کرتے ہیں، وہ لوگ کم کاہل ہوتے ہیں۔
- خصلت :- جب اس کی دلی قوی کی تحریک سُست ہو جاتی ہے تو اس کی خصلت ابھر کر سامنے آتی ہے۔
- پھوٹا ہوا :- جاہل لوگ پھوٹا ہوا اور بدسلیقہ ہوتے ہیں۔
- وحشی :- جب انسان کاہل ہو جاتا ہے تو وہ وحشی بن جاتا ہے
- مصروف :- مکان اچھی لڑکی ہے وہ ہمیشہ اچھے کاموں میں مصروف رہتی ہے۔
- توقع :- جب تک ہماری قوم میں کچھ تبدیلیاں نہیں ہوگی تب تک ہمارے قوم کی بہتری کی توقع نہیں کی جاسکتی ہے۔
- مشقت :- ہمیں کوشش کرنی چاہیے کہ ہم ہر کوئی کام محنت و مشقت سے کریں۔
- سوال ۳: جملے پورے کیجئے: (کتاب پر لکھئے)

- ۱ کہ بہ مجبوری اس کے لئے محنت کی جاتی ہے اور ہاتھ پاؤں کی کاہلی چھوڑی جاتی ہے۔
- ۲ کہ اپنے اندونی قومی کو زندہ رکھنے کی کوشش میں رہے۔
- ۳ جن میں ان کو تو اے دلی اور موت عقلی کو کام میں لانے کا موقع ملے۔
- ۴ کہ ہمارے ملک میں جو ہم کو اپنے مو اے دلی اور قوت عقلی کو کام میں لانے کا موقع نہیں رہا ہے۔
- ۵ اس وقت تک ہم کو اپنی قوم کی بہتری کی توقع کچھ نہیں ہے۔
- ۱ صفحہ نمبر ۱۵ مندرجہ ذیل الفاظ سے صفت بنائیے۔

عقل	عقلی	محنت	محنتی	علم	علمی	وطن	وطنی	خیال	خیالی
انسان	انسانیت	حیوان	حیوانی	قوم	قومی	شخص	شخصیت	ذہن	ذہنی