पु•ना International School

Shree Swaminarayan Gurukul, Zundal

# Class-VIII

# Science

# Specimen copy

# Session-22-23

# INDEX

| Sr. No | Month | Chapter | Remarks |
|---|---|---|---|
| 1. | April | Chapter 1: Crop Production and Management.<br>Chapter 2: Microorganisms: Friend and Foe. | |
| 2. | April/May | Chapter 2: Microorganisms: Friend and Foe | |
| 3. | June | Chapter 3: Synthetic Fibres and Plastics. | |
| 4. | June | Chapter 4: Materials: Metals and Non-Metals. | |
| 5. | July | Chapter 5: Coal and Petroleum.. | |
| 6. | July | Chapter 6: Combustion and Flame. | |
| 7. | July | Chapter 7: Conservation of Plants and Animals. | |
| 8. | August | Chapter-8:Cell – Structure and Functions | |
| 9. | August | Chapter-9Reproduction in Animals | |

## CH – 1CROPPRODUCTIONANDMANAGEMENT

**Crop :** When plants of the same kind are grown and cultivated at one place on a large scale, it is called a crop.

- In India, crops can be broadly categorised into two types based on seasons - Rabi and Kharif crops.
- Sowing of seeds at appropriate depths and distances gives good yield. Good variety of seeds are sown after selection of healthy seeds. Sowing is done by seed drills.
- Soil needs replenishment and enrichment through the use of organic manure and fertilisers. Use of chemical fertilisers has increased tremendously with the introduction of new crop varieties.

- **Basic practices of crop production:**
  (i) **Preparation of Soil**: One of the most important tasks in agriculture is to turn the soil and loosen it.The process of loosening and turning of the soil is called tilling or ploughing.

  (ii) **Sowing**: Sowing of seeds at appropriate depths and distances gives good yield. Good variety of seeds is sown after selection of healthy seeds. Sowing is done by seed drills.

  (iii) **Adding Manure and Fertilisers** Soil needs replenishment and enrichment through the use of organic manure and fertilisers. Use of chemical fertilisers has increased tremendously with the introduction of new crop varieties.

  **Fertiliser**: The inorganic compounds containing nutrients such as nitrogen, potassium and phosphorus. They are made in the factories. Example: Urea, ammonium sulphate, potash, etc.

  **Manure**: A natural substance prepared from decomposition of plant and animal wastes (cow dung, animal bones, dead leaves, dead insects and vegetable wastes) by the action of microbes.

  (iv) **Irrigation :** Supply of water to crops at appropriate intervals is called irrigation.

  **Method of Irrigation**:
  (a) Tradition methods of Irrigation: Moat, Chain pump, Dheki, Rahat.
  (b) Modern methods of Irrigation: Sprinkler system, Drip system.

(v) **Protection from Weeds:** Weeding involves removal of unwanted and uncultivated plants called weeds.

(vi) **Harvesting:** Harvesting is the cutting of the mature crop manually or by machines.

(vii) **Storage** Proper storage of grains is necessary to protect them from pests and microorganisms.Harvested food grains normally contain more moisture than required for storage. Large scale of storage of grains is done in silos and granaries to protect them from pest like rats and insects. Farmers store grains in jute bags or metallic bins.

- Food is also obtained from animals for which animals are reared. This is called **animal husbandry**.

**Q1.Tickthecorrectoption –**

1. Wateringthe crops is called:

(a) sowing (b)m anuring (c)tilling (d) irrigation

**Ans– (d)irrigation**

2. Weedsarethe:

(a) main crop plants (b)insects andpests (c)unwantedplants growingalongthecrop (d)chemical substances

**Ans-(c)unwantedplantsgrowin g alongthecrop**

3. Kharifcropsaresownin

(a) March , April (b)May, June (c)October,November (d)Anytime

**Ans – ( b) May, June**

4. Rabicropsaresown in

(a) July,August (b)October,November (c)May,June (d) Anytime

**Ans-( b) October, November**

5. Which ofthefollowingisarabicrop?

( a)Rice ( b )Mustard (c)Soyabean ( d)Maize

**Ans-(b) Mustard**

6. Whichofthe followingshouldbeusedbyafarmer with largefarmtoharvesthiscropsquicklyandefficiently?

( a)Winnowingmachine (b)Combine (c)Sickle ( d)SeedDrill

**Ans- (b) Combine**

7. Whichtype ofirrigation issimilartorainfall?

( a)Moat (b)Sprinklersystem ( c)Rahat (d) DripSystem

**Ans – (b) Sprinklersystem**

8. Whichofthefollowingtoolhelpsinuniformdistributionofseedswhile sowing?

( a)Thresher (b) SeedDrill (c)funnelconnected topipes

(d)Sprinkler

**Ans - (b) SeedDrill**

**Q2. Fillthe blanks-**

**float, water, crop, nutrients, preparation**

(a) Thesame kind of plants grownandcultivated on alargescaleataplaceiscalled**crop**.

(b) Thefirst stepbeforegrowingcrop is**preparation** of soil.

(c) Damagedseedswould**float**on topof water.

(d) Forgrowingcrop, sufficientsunlight and**water**and**nutrients**from thesoil areessential.

**Q 3. Answerinoneortwoword –**

**i) Namethetoolused witha tractorfor sowingseedsinafield.**

Ans – Seeddrill

**ii) Namethepractice followedfor large scale rearing offarmanimals.**

Ans– AnimalHusbandry

**iii) Giveexampleofeach–**

**a) Kharifcrop b) Rabicrop**

Ans – a)Kharifcrop –Paddyandmaize

**b)** Rabicrop – Wheatand pea

**iv) Pickouttheoddone fromthe followingwordsgiven -Plough, SeedDrill, Hoe,ChainPump,Sickle**

Ans – Seeddrill

**v) Namethetoolused fortillingof soil.**

Ans–Plough

**Q 4. ShortAnswerquestions–**

**i) Definetheterms–Manure,Irrigation ,Fertiliser**

Ans – **Manure - Manure** is an organic substance which is obtained from decomposition of plant or animalwastes.

**Irrigation-**Supplyof waterto cropsatappropriateintervals is calledIrrigation.

**Fertiliser-**Fertilisers arechemicalsubstances whicharerichin aparticular nutrient.

**ii) Givereason-Earthwormsarenature'sploughmen.**

Ans - Theymakeburrows in soilandbringlower fertilelayer abovethe ground.

**iii) During whichmonthsdofarmersgrowmustardinIndia?**

Ans. Seed of mustard germinates at a low soil temperature of**40°F**. Therefore, cultivation of mustard isdoneduringwinterseason which ranges in our countryfromOctobertoMarch.

**iv) Givethreereasons,why soilshouldbe turnedandloosened?**

Ans – a)It allows the roots to penetrate deepinthesoil.

b) Ithelpsthegrowthof earthwormsandmicrobesin thesoil.

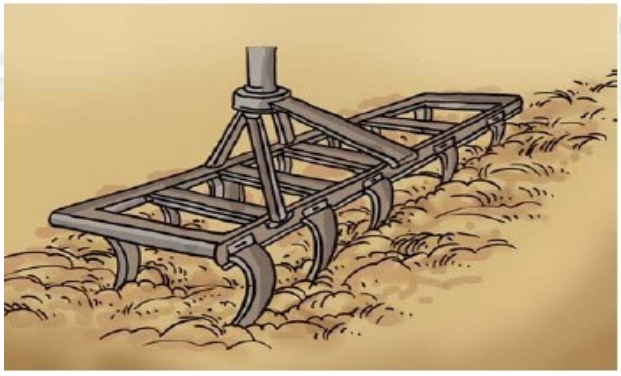
c) Various nutrients held in the deadorganisms arereleasedback in the soil.

**v) DifferentiatebetweenManureandFertilisers.**

| Manure | Fertiliser |
|---|---|
| (i) Itisnatural. | (i) Itisman-made. |
| (ii) Itis organic. | (ii) Itisinorganic. |
| (iii) Itadds humusto the soil. | (iii) Itdoesnotaddhumus. |
| (iv) Itis notnutrientspecific. | (iv) Itis nutrientspecific. |
| (v) Itis cheap. | (v) Itiscostly. |
| (vi) Itis preparedinthefields. | (vi) Itispreparedinfactories. |

**Q 5 . LongAnswerquestions–**

**i) Identifytheinstrumentshown belowandwritea shortnoteonit–**



Ans– Theinstrumentis Seeddrill.

Seeddrill is usedinsowing of seedswiththehelpoftractors. Seed drill ensures thatseedsaresownuniformlyatequaldistanceanddepth. Whilesowing , seeddrill coverstheseedwithsoilwhichprotectsseedsfrombeingeatenbybirds.

**ii) Describeinbriefaboutanimalhusbandry.**

Ans – Animalhusbandryisthebranchofagriculturecconcernedwithanimalsthatare raisedformeat,fibre, milk , eggs,or other products.

Itincludesday-to-daycare, selectivebreedingandtheraisingof livestock likeplants, animals.Theyareprovided withproper food, shelterand care .

**iii) Describetwomethodsofirrigationwhichconservewater.**

Ans- The two methods ofirrigation which conservewater are-

(a) Sprinkler system- This system is useful in uneven land where sufficient water is not available. Theperpendicular pipes having rotating nozzles on top are joined to the main pipeline at regular intervals. Whenwaterflowsthrough thispipeat highpressure,it escapesthroughthe nozzlesandsprinkleinalldirections.

(b) Drip system- In this system water falls drop by drop just at the position of roots. It is mainly used forwatering fruit plants, gardens and trees. In this method water is not wasted at all. It is mainly used in waterdeficientareas.

**iv) Whyisitnecessarytocontrolweeds? Howcanwecontrol them?**

Ans. Theweedshave to be removed, otherwise our own crop plants may not get sufficient water, nutrients,spaceand light. So, theyareremoved eitherbymanual methodor byusing weedicides.

The manual removal includes physical removal of weeds by uprooting or cutting them close to the groundfromtime to time.This is donewith thehelp of akhurpi or harrow.

By usingweedicidesalso, we can remove weeds. These weedicidesonly damage weeds and do not harmcrops.

**HOTS**

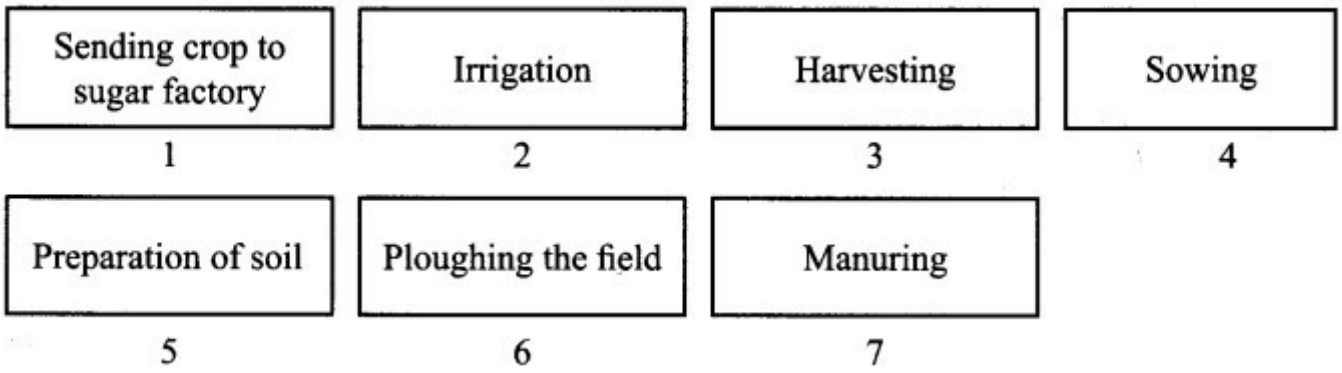
**i) Beera ,wantstopracticecrop rotationinhisfield. SuggestaRabicropandaKharifcropwhichwill replenish his fieldwith nitrogen. Whichcrop replenishesnitrogenandwhy ?**

**Ans -** Beera can grow the crops ofleguminousplants because these plantshave rhizobium bacteria in themwhich help to replenish the soil with nitrogen . Example of rabi crops : Peaandwheat . Example of kharifcropsare : riceand soyabean

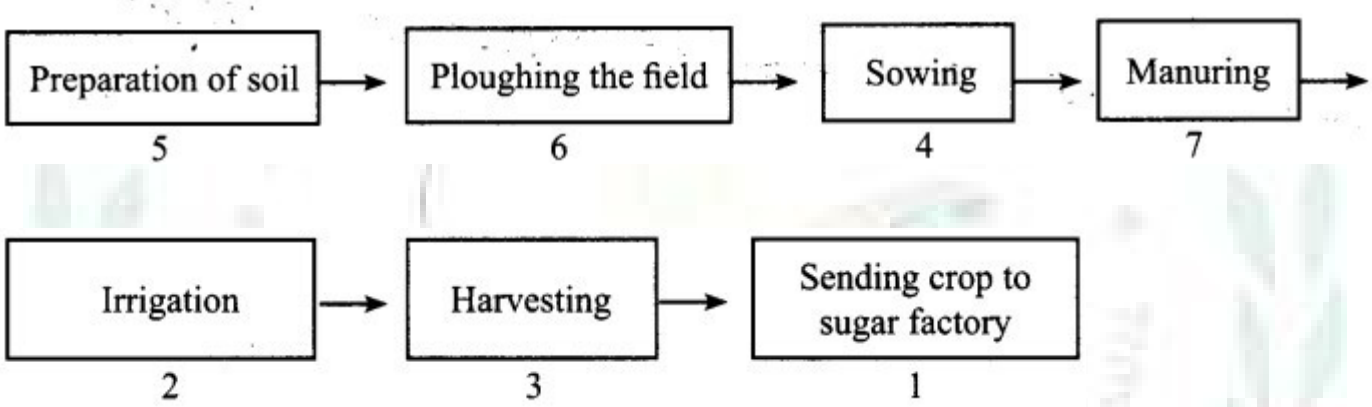
**ii) Ifwheatissowninthe Kharif season.Whatwouldhappen?Discuss.**

Ans. Kharif crops need lot of rainfall, whereas wheat needs winter season and not heavy rainfall. So, ifwheat were sown in Kharif season, the crops will get damaged due to heavy rainfall and water logging in thefield.

**iii)** A**rrangethefollowingboxesinproperordertomake aflowchartof sugarcane cropproduction-**




Ans-

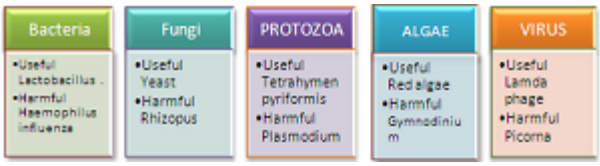


## CH– 2 MICROORGANISMS FRIENDANDFOE

**Micro-organisms:** Micro-organisms are too small and are not visible to the unaided eye.

- They can survive under all types of environment, ranging from ice cold climate to hot springs and deserts to marshy lands. They are also found inside the bodies of animals including humans.
- Micro-organisms are found in air, water and in the bodies of plants and animals.
- They may be unicellular or multicellular.
- Micro-organisms are classified into four major groups. These groups are bacteria, fungi, protozoa and some algae.
- Viruses are quite different from other micro-organisms. They reproduce only inside the host organism; bacterium, plant or animal cell.

- Based on the significance, micro-organisms can be useful or harmful to us.




**Uses of microorganisms**


- Protozoan cause serious diseases like **dysentery and malaria.**
- Some bacteria and blue green algae present in the soil fix nitrogen from the atmosphere and convert into nitrogenous compounds.
- Certain bacteria convert compounds of nitrogen present in the soil into nitrogen gas which is released to the atmosphere.
- **Pathogens:** Some of the microorganisms cause diseases in human beings, plants and animals. Such disease causing microorganisms are called pathogens.
- **Cleaning of Environment:** The microorganisms decompose dead organic waste of plants and animals converting them into simple substances. These substances are again used by other plants and animals. Microorganisms can be used to degrade the harmful and smelly substances and thereby clean up the environment.

**Q1.Tickthecorrectoption –**

(a) Yeast is used inthe production of

(i) Sugar (iii)hydrochloricacid

(ii) alcohol (iv)oxygen

**Ans – (ii)alcohol**

(b) The followingisan antibiotic

(i) Sodiumbicarbonate (iii)Streptomycin
(ii) Alcohol (iv)Yeast

**Ans–(iii) Streptomycin**

(c) Carrier ofmalaria-causingprotozoanis

(i) Female Anopheles mosquito (iii)housefly
(ii) cockroach (iv)butterfly

**Ans– (i)Female Anophelesmosquito**

(d) The most commoncarrierofcommunicablediseasesis

(i) ant (iii)dragonfly
(ii) housefly (iv) spider

**Ans – (ii)housefly**

(e) Thebreadoridlidough risesbecause of

(i) heat (iii)growthofyeastcells
(ii) grinding (iv)kneading

**Ans–( iii) growthof yeastcells**

(f) Some plants have nitrogen-fixing bacteria in their root nodules. What are these bacteriacalled?
**(i)** Blue green algae (iii)Nitrosomonas
**(ii)** Azotobacter (iv)Rhizobium

**Ans -(iv)**

**RhizobiumQ2.Fillinthe**

**blanks.**

**(a)** Microorganismscanbeseenwiththehelpof a**microscope**.

**(b)** Blue-green algaefix**nitrogen**directlyfromairtoenhancefertilityof soil.

**(c)** Alcoholis producedwiththehelpof**yeast**.

**(d)** Choleraiscaused by**a bacteria**.

**(e)** Theprocessof conversionof sugarinto alcoholis called**fermentation.**

**(f)** Breadmouldisanexampleof**fungi.**

**Q 3. Answerinoneortwoword –**

**i) Nameofthe bacteriumpresent inthe curd.**

Ans–Lactobacillus

**ii) Namethe plant disease whichiscausedbyBacteria.**

Ans – CitrusCanker

**iii) Namethepathogenwhichcauses cholera.**

Ans–Bacteria

**iv) Whichorganismsaremicroscopic anddependentonhostorganisms forreproduction?**

Ans – Viruses

**v) Nameanytwoseriousdiseases causedbyprotozoa.**

Ans– Polioand chickenpox

**vi) Nameany twofood preservatives.**

Ans– Oil,Sugar, Vinegar

**vii) Nameanytwocommunicablediseases.**

Ans – Cholera,commoncold

**Q 4.Shortanswerquestions–**

**i) Whataremicroorganisms ?**

Ans – Organismsthatcannotbeseenbynakedeyearecalledmicroorganisms.
Theymaybeunicellularormulticellular.

**ii) Whyarevirusesdifferent fromother microorganisms?**

Ans – Virusesarealsomicroscopicbutaredifferentfromothermicroorganisms.

Theyreproduceinsidethe host cellwhich maybe abacterium,plantoranimal.

**iii) WhatisPasteurisation?**

Ans - Partial sterilization of a product such as milk at a high temperature about 70°Cfor15to30secondsisknownas Pasteurization. Bydoingso, itprevents the growthof microbes.

**iv) Howisfoodpoisoningcaused?**

Ans-

Foodpoisoningiscausedduetotheconsumptionoffoodspoiltbysomemicroorganismswhichproduce toxic substances.

**Q 5. LongAnswerquestions–**

**i) Howcanwe prevent the followingdiseases?**

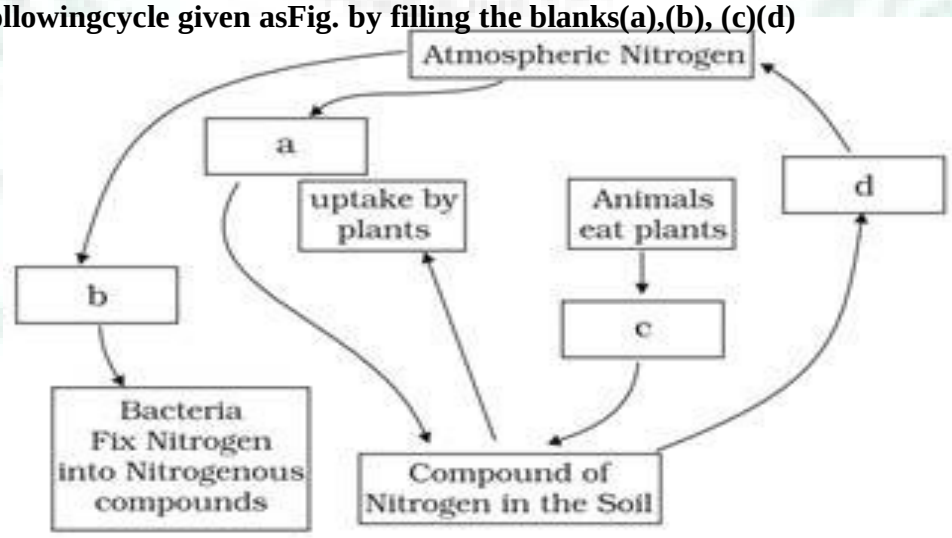
**(a) Cholera**
**(b) Typhoid**
**(c) Hepatitis A**

**Ans.**(a) Cholera: By drinking boiled water, cooking food well, eating covered food and keeping oursurroundingsclean.

(b) Typhoid:Eatingproperlycookedfood, drinkingboiled food,gettingvaccinatedagainstthe disease.

(c) Hepatitis A: Drinking boiled water, washing hands thoroughly after using rest room and gettingvaccinatedagainstthedisease.

**ii) Completethe followingcycle given asFig. by filling the blanks(a),(b), (c)(d)**



**Ans.**(a)Lightningfixesnitrogen.

(b) Nitrogenfixingbacteriaand bluegreen algaefixatmosphericnitrogen.

(c) Nitrogenouswastefrom excretionanddeath.

(d) Bacteriaturn compoundsofnitrogen intogaseous nitrogen.

**iii) Whatarethe majorgroupsofmicroorganisms?**

**Ans.**Themajorgroupsofmicroorganismsare:

- **Bacteria:**Theyaresinglecelled diseasecausing microorganisms.Theycan bespiral or rod shaped.
- **Fungi:** They are mostly multicellular disease causing microbes. Bread moulds are common examplesoffungi.
- **Protozoa:** They mainly include organisms such as Amoeba, Plasmodium, etc. They can beunicellularor multicellular.
- **Virus:**Virusesare disease causingmicrobes that reproduce onlyinsidethehost organism.
- **Algae:** They include multicellular, photosynthetic organisms such as Spirogyra, Chlamydomonas,etc.

**iv) Writea shortparagraphonthe harmscausedbymicroorganisms.**

**Ans.** Microorganisms cause diseases in animals. For example, in humans, bacteria cause diseases such astuberculosis, cholera, typhoid, etc. In cattle, the foot and mouthdisease is caused by a virus. Also, severalmicrobes cause diseases in plants. For example, the productivity of wheat, orange, apple, etc. is reduced dueto microbial diseases in plants. Certain microbes, on entering into our body, produce toxic substances. Thisleads to food poisoning. Some microorganisms such as fungus spoil our food. For example, bread when leftunused undermoist conditions gets spoilt byfungus, producing a white cotton likegrowth on the bread.

**v) Whatareantibiotics? Whatprecautionsmustbetakenwhiletakingantibiotics?**

**Ans.** The medicines that kill or stop the growth of the disease-causing microorganism are called antibiotic.Streptomycin, tetracycline, erythromycin etc. are common antibiotics. They are manufactured by growingspecific micro-organismsand areused to curea varietyofdiseases.

Followingprecautionsmustbe takenin usingantibiotics-

- Thesemedicinesshouldbetakenonlyon theadviceofa qualifieddoctor.
- Onemustfinishthecourseprescribedbythedoctor.
- If anybody takes antibiotics when not needed, his or her body may develop resistance against thatantibiotic.

**HOTS**

**i) Whilereturningfromtheschool, Boojhoatechaatfromastreethawker. Whenhereachedhome,hefelt illandcomplainedofstomachacheandfell ill. Whatcouldbethereason ?**

Ans – Thiscouldbeduetothecontaminatedfood. Oftenstreetfoodgetcontaminatedbypathogenicmicro–organisms. Theunhygeinicconditionoftheshopattractsfliesandhelppathogenstogrow.

Sometimesthe utensilswhich are usedfor servingalsoget contaminated.

**ii) Findoutsomeharmfulandusefuluseofmicroorganismsfromyour dailylife.**

Ans -

| **S.No.** | **Name** | **Typeofmicroorganisms** | **Useful/Harmful** |
|---|---|---|---|
| 1. | Lactobacillusforcurd | Bacteria | Useful |
| 2. | Yeast(Makingofbread ) | Fungi | Useful |
| 3. | Yeast(Makingofalcohol,wine) | Fungi | Useful |
| 4. | Azotobacter, Rhizobium | Bacteria | Useful |
| 5. | Malaria ( Anopheles mosquito) | Protozoa | Harmful |
| 6. | Streptococcus(disease) | Bacteria | Harmful |
| 7. | Spoilingofbread | Fungi | Harmful |

## CH– 3 SYNTHETICFIBRES ANDPLASTICS

- All synthetic fibres are man-made fibres that are prepared by a number of processes using raw material of petroleum origin, called petrochemicals. Synthetic fibres consists of many small units or monomers combine to form a larger unit called a polymer.
- While natural fibres are obtained from plants and animals, synthetic fibres are obtained by chemical processing of petrochemicals. Like natural fibres, these fibres can also be woven into fabrics.
- Synthetic fibres find uses ranging from many household articles like ropes, buckets, furniture, containers, etc. to highly specialized uses in aircrafts, ships, spacecrafts, healthcare, etc.
- Depending upon the types of chemicals used for manufacturing synthetic fibres, they are named as Rayon, Nylon, Polyester and Acrylic.
- The different types of fibres differ from one another in their strength, water absorbing capacity, nature of burning, cost, durability, etc.

**Types of Synthetic Fibres**:
(i) **Rayon:** It is made from cellulose obtained from wood pulp. It is used to make containers, car upholstery, etc.

(ii) **Nylon:** A polyamide made from petroleum. It is lightweight, strong and durable. The fabric allows easy evaporation and dries quickly. It is used in parachutes, flak vest, combat uniforms, tires, etc.

(iii) **Polyester:** A versatile and important man-made fabric. It has an outstanding characteristic of resisting wrinkle and springing back into its crisp, smooth shape. It is strong and soft. It is used in dresses, suits, rainwear, etc.

(iv) **Acrylic:** A fibre similar to that of wool and is used to make sweater, blankets, shawls, etc. It is lightweight, soft and warm. Also it is cheaper than natural wool. It is resistant to chemicals, moths and sunlight. Therefore, they are widely in use nowadays

**Plastics**: Like synthetic fibres, plastic is also a polymer. Some plastics have a linear arrangement of the units and some have a cross-linked arrangement of the units. Examples: Polythene. Today, life without plastics cannot be imagined. Be it home, or outside, plastic is every where.

**Characteristics of Plastics**:

(i) **Non-reactive:** Not affected by air, water, soil, etc.

(ii) **Light, strong and durable:** Light, strong and durable and can be moulded into different shapes and sizes.

(iii) **Poor Conductors:** Do not allow heat and electricity to flow through them.

· The waste created by plastics is not environment friendly. On burning plastics release poisonous gases. On dumping in the ground they may take years to degenerate. This is because of their non-

biodegradable nature.· We need to use synthetic fibres and plastics in such a manner that we can enjoy their good qualities and at the same time minimise the environmental hazards for the living communities.·.· ·

· **Effect of Plastics on Environment**: Natural materials like wood and paper are biodegradable (bio = living; degradable = able to broken down). In contrast, most plastics do not decay, therefore, they are non-biodegradable. The lightweight nature of plastics can also be a problem. Burning of plastics also release poisonous fumes into the atmosphere. This way plastics pollute the environment.

**Q 1. Tickthecorrectoption –**

i) Rayonis different from synthetic fibresbecause
(a) Ithas asilk likeappearance.
(b) It isobtainedfrom woodpulp.
(c) Itsfibrescan alsobe wovenlikethoseof naturalfibres.

**Ans: (b) it is obtained fromwoodpulp.**

ii) Plastic usedfor coatingnon-stick pans is
(a)PVC (b)polyester (c)Bakelite (d)melamine

**Ans– (d) melamine**

iii) Woodpulp is usedto make
(a) plastic (b)wool
(c)jute (d)rayon

**Ans – ( d) rayon**

iv) Melamineis
(a) thermoplastic polymer (b)thermosettingpolymer
(c)fibre (d)elastomer

**Ans–(b)thermosettingpolymer**

v) Fibreproduced infactories iscalled
(a)man-made fibre (b)naturalfibre
(c)synthetic fibre (d)both (a)and (c)

**Ans–(d)both(a)and(c)**

vi) Thestrongest syntheticfibreis
(a)nylon (b)rayon
(c)polyester (d)acrylic

**Ans – (a) nylon**

vii) Theplasticwhichcannot berecycled is
(a)jute (b)rayon
(c) petrochemicals (d)bakelite

**Ans – ( d) bakelite**

**Q2.Fillin the blanks–**

i. Syntheticfibresaresynthesisedfromrawmaterialcalled**petrochemicals.**

ii. Likesyntheticfibres,plastic is alsoa**polymers.**

iii. **Terylene**isapopularpolyester.

**Q 3 . StateTrueorFalse-**

i. Thermoplasticscanbenteasily.**True**

ii. Polymers aremadeup ofmanybiggerunits. **True**

iii. PET isaveryfamiliar formof polyester.**True**

iv. Polyester fabricsdonot getwrinkledeasily.**True**

v. Fabricobtainedfromsilkfibreisverycheap.**False**

**Q 4. Answerin oneortwoword –**

**i. Namethematerialusedformakingropesforrockclimbing.**
Ans-Nylon.

**ii. Whatname is given to plasticswhich canbe re-setanumberoftimes?**
Ans-Thermoplastics.

**iii. Tintakes about 100 yearsto degenerate.Is it biodegradableornon-biodegradable?**
Ans-Non-biodegradable.

**iv. Whichmaterialisbestsuitedforcoveringelectric wires?**

Ans – PVC

**v. Clothesmadeofwhichfabric arebest suitedforhot climate?**

Ans –Cotton

**Q 5.Shortanswerquestions–**

**i. Categorise the materials of the following products into 'can be recycled' and 'cannot be recycled'.Telephone instruments, plastic toys, cooker handles, carry bags, ball point pens, plastic bowls, plasticcoveringon electricalwires,plasticchairs, electricalswitches.**

| Canbe recycled | Cannotberecycled |
|---|---|
| Toys, carry bags, plastic bowls, plastic covering onelectricalwires, plastic chairs. | Telephoneinstruments,cookerhandles,electrics witches,ballpointpens,electricalswitches. |

**ii. Giveexamples to showthat plasticsare non-corrosiveinnature.**

**Ans.** Plastics are non-reactive in nature, even with strong chemicals. Hence, they don't get corroded and arethereforenon-corrosive in nature.

Forexample:

(1) Phenyloracids, used for household workare stored in plastic bottles.

(2) Buckets,bottlesetc. don't react with waterstored in them.

**iii. Givereason , whyplasticcontainersare favouredfor storingfood.**

Ans:The main advantages ofusingplasticfor storingfoodare-
a. Plastichas lightweight.
b. Goodstrength.
c. Easytohandle.

**iv. Explainthe differencebetweenthermoplasticandthermosettingplastics.**

Ans:

| Thermoplastics | Thermosettingplastics |
|---|---|
| (i) These plastics softened on heating and can bebenteasily. | (i) These plastics when moulded once, can't besoftenedagain. |
| (ii) Theydonot losetheirplasticity. | (ii) Theylose their plasticity. |
| (iii)Examplesarepolyethene,PVC,etc. | (iii)Examplesarebakeliteand melamine. |

**v. Givereason, why somefibres arecalled synthetic.**

Ans- Some fibres arecalled syntheticfibres becausetheyare made bymanusingchemicals.

**vi. Whatarethe disadvantagesofwearingsyntheticfabrics?**

Ans - Synthetic fabric catches fire very easily. It melts and sticks to the body of the person wearing it.Duringsummers, synthetic fibres do not absorbsweatanda person wearingitfeels uncomfortable.

**Q6. Longanswerquestions–**

**i. 'Manufacturingsynthetic fibresisactuallyhelpingconservationofforests'.Comment.**

Ans - The said statement is correct to a certain extent. The forests would be conserved if synthetic fibres areused, but other effects of synthetic fibres are more harmful. Disposal of synthetic fibres causes lot ofenvironmentalpollution. Whensyntheticfibres bum, lotofsmokeis produced.

**ii. 'Avoidplasticsasfaraspossible'.Comment onthisadvice.**

Ans-Plastics areveryuseful,butitcauses seriousenvironmental andhealth concern:

- Plasticsarenon-biodegradable.
- Carelessdisposal of plasticbags, chokes, drains andblocks the soil.
- If eatenbycows,itcankillthem.
- Plasticbags canalso contaminatefoodstuffsdue topoisonous dyesgettingabsorbedinto food.

**iii. Explainwhythefollowingaremade ofthermosettingplastics.**

**(a) Saucepanhandles** **(b) Electric plug/ switches/plug boards**

**Ans: (a) Saucepan Handles**: Saucepan handles are made from the thermosetting plastics because these arebadconductors of heat. Theydo notbend or deform on heating.

**(b) Electric plug/Switches/Plug Boards:** Electric plug/switches/plug boards are made from thermosettingplastics because thermosetting plastics are bad conductor of heat and electricity also. Hence it is used tomakesucharticles.

**HOTS**

**i. Rana wants to buy shirts for summer. Should he buy cotton shirts or shirts made from syntheticmaterial?Advise Rana,givingyour reason.**

Ans - He should buy cotton shirts. This is because cotton has more capacity to hold moisture than syntheticclothes. In summers we have extensive sweating which is easily soaked by cotton shirts and hence, cottonclothesare much betterthan the clothesmadefromsyntheticmaterial.

**iii. Should the handle and bristles of a toothbrush be made of the same material? Explain youranswer.**

Ans -No, the handle and bristles of a toothbrushshould not be made of the same material. This is becauseour gums are soft and the bristles should be made of soft material so that it does not harm the gums. On theotherhand, the handlesshouldbemadeup ofhard materialsothatitcangive a firmgrip.

**iii. A person has to make a non-stick pan. He has three types of plastic-Bakelite, Teflon and PVC.Whichplasticwill he use forcoating andwhy ?**

Ans - The person will use Teflon because it is not affected by heat and does not react chemically with othersubstances

**CH– 4 METALSANDNON- ETALS**

- Metals are strong and durable. Thus metals are used so widely for making almost everything Example: Metals are used in making machinery, automobiles, aeroplanes, buildings, trains, satellites, gadgets, cooking utensils, water boilers...etc.

**Physical Properties of Metals**

- The metal base in an electric iron is for conducting heat, not electricity.
- Metals are very good conductors of heat. Cooking utensils, irons, heaters, etc. are all made of metals which are good conductors of heat.
- Metals can be easily shaped into wires. This property of metals is called ductility.
- Metals can be easily shaped into thin flat sheets. This characteristic of metals is called malleability.
- Metals make a sound when struck with hard objects. Metals can be polished to a shiny appearance.

**Chemical Properties of Metals**

- metals react with oxygen to produce metal oxides which are basic in nature. Non-metals react with oxygen to produce non- metallic oxides which are acidic in nature.
- Some metals react with water to produce metal hydroxides and hydrogen gas. Generally, non-metals do not react with water.
- Metals react with acids and produce metal salts and hydrogen gas. Generally, non-metals do not react with acids.
- Some metals react with bases to produce hydrogen gas.
- More reactive metals displace less reactive metals from their compounds in aqueous solutions

**Physical Properties of Non-metals**

- Non-metals are non-lustrous, non-malleable and not ductile, except for carbon fibres, which are ductile.
- Non-metals are not sonorous. They do not produce any sound when hit..
- Non-metals do not conduct heat and electricity except for graphite

**.Chemical Properties of Non-metals·**

- Non-metals react with oxygen to form their oxides. Non-metal oxides are acidic or neutral in nature.
- In general non-metals do not react with water though they may be very reactive in air.
- Non-metals do not react with acids

**Metals and non-metals are used widely in every day life.**

**Q1.Tickthecorrectoption –**

i. Whichof the followingcan e beatenintothin sheets?

a)Zinc b)Phosphorus c)Sulphur d)Oxygen

**Ans– (a)Zinc**

ii. Which of thefollowingstatementsis correct?

(a) Allmetals areductile.

(b) Allnon-metals areductile.

(c) Generally,metals areductile.

(d) Some non-metalsareductile.

**Ans- (c)Generally,metalsareductile**

iii. Metalsaregenerallysolid. Which of the followingmetalsis in d stateatroom theliquitemperature?

a)Mercury b)Silver c) Aluminum d) Sodium

**Ans– a)Mercury**

**Q2. Fillthe blanks-**

i. Phosphorusisavery**rectivea** non-metal.

**ii.** Metalsare**good** conductorsofheatand**electricity**.

iii. Ironis **more** reactive than copper.

iv. Metalsreactwithacidstoproduce**hydrogen** gas.

**Q3. Mark‘T’ ifthe statement istrue and ‘F’ ifit is false.**

**i. Generally,non-metals reactwithacids.(False)**

**ii. Sodiumis a very reactivemetal. (True)**

**iii. Copperdisplaceszincfromzincsulphatesolution. ( False)**

**iv. Coalcan be drawn intowires. ( False)**

**Q 4. Answerinoneortwoword –**

i. **Nametwo soft metals whichcan becut with aknife.**

**Ans.** (i) sodium (ii) potassium

ii. **Whichnon-metalisessentialforour lifeandall livingbeingsinhaleitduringbreathing?**

**Ans.**Oxygengas

iii. **Nametwomajornon-metalswhich arepresentinfertilisersandenhancethegrowthofplants.**

**Ans.**(i) nitrogen (ii) phosphorus

iv. **Whichnon-metal isusedtodisinfectwater?**

**Ans.** Chlorine

v. **Which of the following metals can displace the other two metals from their salt solutions?zinc, iron, copper**

Ans.Zinc

**Q 5. ShortAnswerquestions–**

**i. Whyarebellsmadeof metals?**

**Ans.** Bells aremade ofmetal because metals aresonorous(produce soundwhile strikeon it).

**ii. IntheFig you find that the bulb glows when an iron nail is placed between two ends of wire.Completethe followingsentencesonthe bases ofthis fact.**

(a) isametal.

(b) Metalsare good_____ofelectricity.

**Ans.**(a)iron(b)conductor

**iii. Canyoustorepicklein analuminiumutensil?Explain.**

**Ans.** Aluminium is a metal. Metals are more reactive with acids. So acidic foodstuffs like lemon picklescannotbe stored inaluminiumutensils.

**iv. Listthe uses non-metals.**

Ans.Non-metals are

a. Essentialfor ourlifewhich all livingbeingsinhale duringbreathing.

b. Usedinfertilisersto enhancethegrowthof plants.

c. Usedin waterpurification process.

d. Usedinthepurple coloured solutionwhich is appliedon woundsasan antiseptic.

e. Usedincrackers.

**Q 6 . LongAnswerquestions–**

**i. Givereasons forthe following.**

**(a) Aluminiumfoilsareusedtowrapfooditems.**

**(b) Immersionrodsforheatingliquidsaremadeupof metallicsubstances.**

**(c) Copper cannotdisplacezincfromitssalt solution.**

**(d) Sodiumandpotassiumare storedinkerosene.**

**Ans.** (a) Aluminium is one of the least reactive metals, so it does not react with food items and does notalter the taste. Moreover, being a metal; aluminium is highly malleable and can be made into very thinfoilswhich are perfectfor wrappingfood.

(b) Immersion rods for heating liquids are made up of metallic substances because metals are goodconductors of heat and electricity. The immersion rod needs electric supply to get heated and in turn toheatliquids.

(c) A metal can displace a less reactive metal from its salt in an aqueous solution. But zinc is morereactivethan copper. Therefore, coppercannot displacezinc fromits salt solution.

$Cu(s)+ZnSO_4\ (aq)\rightarrow$Noreaction

(d) Sodiumandpotassiumarehighlyreactivemetals.Ifkeptinopen,theyreadilyreactwithoxygeninthe atmosphere. The reaction is so quick and that sodium and potassium easily catch fire when exposed toair.Topreventaccidentalfire, theyarestored inkerosene.

**ii. Whathappens when**

**(a) DiluteSulphuric acid is pouredona copperplate?**
**(b) Ironnailsareplacedincoppersulphatesolution?**

**Writewordequationsof thereactionsinvolved.**

**Ans. (a)** When dilute sulphuric acid is poured on a copper plate, bubbles appear on the surface of plate.This happens because sulphuric acid reacts with copper to produce hydrogen gas. This can be shown byfollowingequation:
Sulphuricacid(Dilute) +Copper → Coppersulphate +Hydrogen (gas)

**(b)** When iron nails are placed in copper sulphate solution, the blue colour of copper sulphate solutionfades and turns into light green. This happens because iron displaces copper from copper sulphatesolution.Thiscan be shown byfollowing equation:
Coppersulphate+Iron→Iron sulphate+Copper

**iii. Writeanyfivedifferencebetween-metalsandnon-metals.**

| **Metals** | **Non-Metals** |
|---|---|
| Theyarelustrous in appearance. | Theyarenot lustrousinappearance. |
| Theyaresonorous,i.e.theyproduce a typical metallicsoundwhenhitwithsomething. | Theyarenotsonorous. |
| Theyaregoodconductorsofheatandelectricity. | Non-metalsarebadconductorsofheatand electricity. |
| Theyaremalleable andductile innature. | Theyarenotmalleable and ductile innature. |
| Iron, copper,aluminium etc.are examples of metals. | Coal,pencil,sulphuretc.areexamplesofnon-metals. |

**HOTS**

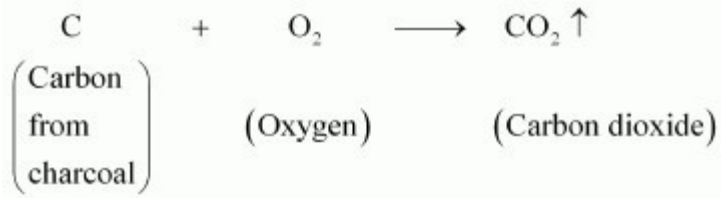
**i. Salonitookapieceofburningcharcoaland collectedthegas evolvedin atesttube.**

**(a) How will shefind thenature ofthegas?**

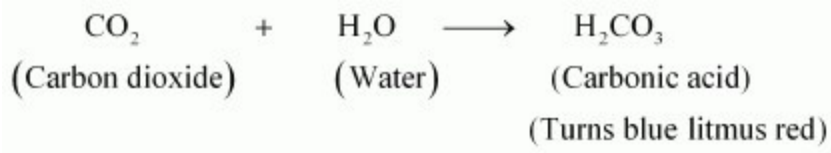
**(b) Writedownwordequationsofallthereactions takingplacein thisprocess.**

Ans -(a) Add a few drops of water in the test tube containing gas. Now, cover the test tube and shake itwell. After shaking, test the solution with blue litmus and red litmus. It will turn blue litmus red. Thus, thegasis acidic in nature.

(b)Charcoalreacts withoxygentoform carbondioxidegas.




Carbondioxide reacts withwater to formcarbonic acid, which turnsbluelitmus paperred.




**ii. One day Reeta went to a jeweller's shop with her mother. Her mother gave an old gold jewelleryto the goldsmith to polish. Next day when they brought the jewellery back, they found that therewasa slight loss in its weight. Can you suggest a reasonfortheloss in weight?**

Ans - To polish a gold ornament, it is dipped in a liquid called aqua regia (a mixture of hydrochloric acidand nitric acid). On getting the environment of aqua regia, the outer layer of gold dissolves and the innershinylayerappears.Thedissolvingof thelayercauses areductioninthe weightofthe jewellery.

**iii. A greenish deposit is found on copper substance if it is exposed to moist air for a long time.Why?**

Ans. This is because when a copper substance is exposed to moist air, copper reacts to water, carbondioxide and oxygen and forms hydroxide and carbonate of copper. The green coat is a mixture of copperhydroxide and coppercarbonate.

**2Cu+ H2O+CO2 + O2 →Cu(OH)2 + CuCO3**

**iv. Why issodiumalwaysstoredin kerosene?**

**Ans.** Sodium metal is very reactive. It reacts vigorously with oxygen and water. A lot of heat is generatedinthe reaction.Itis, therefore, stored in kerosene.

## CH – 5COALANDPETROLEUM

- **Natural Resources**: Resources include everything provide by the nature. They form the wealth of a country.

- **Types of Natural Resources:**
  (i) **Inexhaustible:** There are some resources that are present unlimited in nature and will not be exhausted even if used continuously. Example: Sunlight, Air.
  (ii) **Exhaustible:** These resources are limited and can soon get exhausted because of their excessive use. Example: Forests, wildlife, minerals, coal, petroleum, etc.

- Coal, petroleum and natural gas are fossil fuels.
- Fossil fuels were formed from the dead remains of living organisms millions of years ago.
- Fossil fuels are exhaustible resources.
- Coke, coal tar and coal gas are the products of coal.
- Petroleum gas, petrol, diesel, kerosene, paraffin wax, lubricating oil are obtained by refining petroleum.
- Coal and petroleum resources are limited. We should use them judiciously.

- **Refining**: Petroleum is mixture of various constituents such as petroleum gas, petrol, diesel, lubricating oil, paraffin wax, etc. Refining is the process of refracting the various constituents / fractions of petroleum. It carried out in a petroleum refinery.
- **Natural Gas**: A very important fuel as it easy to transport through pipes and can be compressed and stored under high pressure as Compressed Natural Gas. It causes no pollution and has high calorific value.

### Q1. Tickthecorrectoptions –

**i)** Ignition temperature is the lowest temperature at which a substance catches fire. Identify the correctoptionregardingtheignition temperature ofagood fuel.

A. Ignitiontemperaturebelowroomtemperature

B. Ignitiontemperature aboveroom temperature

C. Ignitiontemperatureequalto100°C

D. Ignitiontemperatureequaltoroomtemperature

**Ans-(B)Ignitiontemperatureaboveroomtemperature**

ii. Combustion of a substancereleases heatand _.

A. oxygen

B. wood

C. light

D. water

**Ans -**(C)**light**

iii. The suspended particles released by combustion of coal in air may lead to a health disease. Select thecorrect option.

A. Goitre

B. Arthritis

C. Asthma

D. Bonecancer

**Ans- (C)Asthma**

iv. How manynaturallyoccurringelements are there?

a).81 b) 69 c).94 d) 42

**Ans. C) 94**

**Q2.Fillin the blanks.**

**i**Fossilfuels are**Coal,Petroleum**and**Naturalgas.**

**ii.** Processofseparation ofdifferent constituentsfrom petroleumiscalled **Refining.**

**iii.** Leastpollutingfuelfor vehicleis**CNG.**

**Q3..Ticktrue/Falseagainstthefollowingstatements.**

**i. Fossilfuelscanbe madeinthelaboratory.(False)**

**ii. CNGismorepolluting fuel thanpetrol. (False)**

**iii. Coke is almost pureformofcarbon. (True)**

**iv. Coaltarisamixtureofvarious substances.(True)**

**v. Kerosene is nota fossil fuel. (False)**

**Q 4. Shortanswerquestions–**

**i. WhatdoesCNGstand for andwhyis it consideredtobea betterfuel thanpetrol?**

**Ans.** CNG stands for Compressed Natural Gas. It is considered to be a better fuel because it creates lesspollution onheatingorburning.

**ii. Namethe petroleumproductusedasfuelforstoves,lamps andjetaircrafts.**

**Ans.**Kerosene isusedasfuel forstoves,lamps andjet aircrafts.

**iii. Writetwoimportantusesof coke.**

**Ans.**It isusedfor themanufacture ofsteeland alsoin extraction ofmanymetals.

**iv. Some natural resources are given in a box. Classify them into the exhaustible and inexhaustiblenaturalresources.**

**air,coal,naturalgas,sunlight,petroleum,minerals,forests,oxygen.**

Ans. Exhaustible natural resources are coal, natural gas, petroleum, minerals, forests. Inexhaustiblenaturalresources are air,sunlight,oxygen.

**iv. Namethe petroleum productused forsurfacingof roads.**

**Ans.**A petroleum product 'Bitumen'isusedfor surfacingofroads.

**v. What arethe advantagesofusing CNGand LPGasfuels?**

**Ans.** The advantage ofusingCNGandLPGare as follows:

- Anon-pollutingfuelforvehicles.
- Theseareused forpowergeneration.
- Theseareused directlyforburninginhomesandfactories.
- Theseareeasilyavailable.

**vi. .Describe characteristicsandusesofcoke.**

**Ans.**Characteristicsofcokeare:

→Tough
→ Porous
→Blackincolour

Usesofcoke:

→Inmanufactureof steel.

→Intheextractionofmetals(asareducingagent).

**Q 4. LongAnswerquestions–**

**i. Writethecharacteristicsandsomeimportantusesof coal.**

**Ans.** Coal is black in colour and hard as stone. It is one of the fuels used to cook food. Earlier it was usedin railway engines to produce steam to run the engine. It is used as fuel in thermal power plants toproduceelectricityand invarious otherindustries.

**ii. Writesomeimportantusesof thevariousconstituentsofpetroleum.**

**Ans.**Petroleum gasin liquid form(LPG) — usedasfuel forhomeand industry.

- Petrol — used asfuel forautomobileand aviation.
- Kerosene—usedasfuelforstoves, lampsandforjetaircrafts.
- Diesel— used as fuel forheavymotorvehicles,electric generators.
- Lubricatingoil — used forlubrication
- Paraffinwax— usedinointments, candles,vaselineetc.
- Bitumen— usedinpaints androadsurfacing.

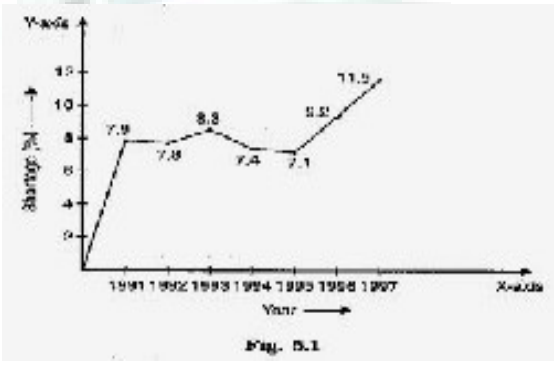
**iii. Describehow coalisformedfromdeadvegetation.Whatisthisprocesscalled?**

**Ans.** About 300 million years ago the earth had dense forests in low lying wetland areas. Due toearthquakes, floods and volcanic eruptions, these forests got buried under the soil. As more soil depositedover them, they were compressed. The temperature also raised as they sank deeper and deeper. Due tohigh temperature and lack of oxygen dead plants inside the earth got slowly converted to coal. Thisprocessofcoalformation is called carbonization.

**iv. Explaintheprocessofformationofpetroleum.**

**Ans.** Petroleum was formed from dead organisms that got buried in the sea millions of years ago. Thesedead bodies got covered with layers of sand and clay. Lack of air, high temperature, and high pressuretransformedthesedead organisms into petroleum and naturalgas.

| S.No. | Year | Shortage |
|---|---|---|
| 1 | 1991 | 7.9 |
| 2 | 1992 | 7.3 |
| 3 | 1993 | 8.3 |
| 4 | 1994 | 7.4 |
| 5 | 1995 | 7.1 |



**HOTS**

**i. Coal reserves are said to be enough to last for another hundred years. Do you think we need toworryinsuch case? Why orwhynot?**

**Ans**. Yes, we do need to worry towards this threat looming large because coal is needed in our day-to-daylifeand its not possible to makeitagain on earth

## CH–6COMBUSTIONAND FLAME

- **Combustion**: The process of burning a substance in the presence of air (oxygen) and undergoes a chemical reaction to produce heat and light.
- The substances which burn in air are called **combustible**.
- Oxygen (in air) is essential for combustion.
- During the process of combustion, heat and light are given out.
- **Ignition temperature** is the lowest temperature at which a combustible substance catches fire.
- **Types of combustion:** The type of combustion differs depending on the type of fuel. Based on nature and intensity combustions are classified into three types. They are:
  (i) Rapid combustion
  (ii) Spontaneous combustion
  (iii) Explosion

- **Flame**: It is a zone or burning vapour. The substances which vaporise during burning give flames. Example: Kerosene oil and molten wax.
- Inflammable substances have very low ignition temperature.
- Fire can be controlled by removing one or more requirements essential for producing fire.
- Water is commonly used to control fires.
- Water cannot be used to control fires involving electrical equipments or oils.
- There are three different zones of a flame - dark zone, luminous zone and non-luminous zone.
- Fuel is any material that is burned to obtain energy that can be used to heat or move another object.
- A good fuel must:
  - Be readily available.
  - Be cheap.
  - Burn easily at a moderate rate.
  - Produce a large amount of heat.
  - Not leave behind any undesirable substances.

- Fuels differ in their efficiency and cost.
- Fuel efficiency is expressed in terms of its calorific value which is expressed in units of kilo joule per kg.
- **Types of Fuels:**
  (i) **Solid Fuels:** Combustible substances which are solid at room temperature. Example: coal, coke, wood, charcoal, etc.
  (ii) **Liquid fuels:** Volatile liquids which produce combustible vapour. Example: Petrol, kerosene, alcohol, diesel, etc.
  (iii) **Gaseous fuels:** Combustible gases or mixture of combustible gases. Example: Natural gas, LPG, biogas, coal gas, etc.

- **Effects of Burning of Fuels**:
  (i) Carbon fuels like wood, coal petroleum release un burnt carbon particles. These are dangerous pollutants causing respiratory diseases, such as asthma.
  (ii) Incomplete combustion of carbon fuels gives carbon monoxide which is a poisonous gas.
  (iii) Increased concentration of carbon dioxide in the air is believed to cause global warming.
  (iv) Oxides of Sulphur and nitrogen dissolve in rain water and form acids. Such rain is called

acid rain. It is very harmful for crops, buildings and soil.

- Un burnt carbon particles in air are dangerous pollutants causing respiratory problems.
- Incomplete combustion of a fuel gives poisonous carbon monoxide gas.
- Increased percentage of carbon dioxide in air has been linked to global warming.
- Oxides of sulphur and nitrogen produced by the burning of coal, diesel and petrol cause
- Acid rain which is harmful for crops, buildings and soil.

**Q1.Tickthecorrectoption–**

**i. Thecalorificvalueofafuelisexpressedintheunitcalled–**

a) Kilojoule perliter

c) Kilogrampermilliliter

b) Kilojoulespergram

d) Kilojoulesperkilogram

**Ans- d)Kilojoulesperkilogram**

**ii. Boojho is writing somestudentsaboutpolyester.**
**Inwhichofthefollowingstatementsisorareincorrect?**

a) Inthesun,heatandlightare producedduetonuclearreactions.

b) Theheatandlightproduced in the sun are kefire.

c) Asubstancewhichcanburn ordinarycombustionasliarecalledcombustiblesubstances.

d) Whenamagnesiumribbonburnsitcombineswithoxygenofair toform

**iii. Thedifferenttypesoffuel are**

a) Solid,Liquid,Gas

c) HeatandFlame

b) Liquidandenergy

d) combustionandIgnition

**Ans–a)Solid,Liquid,Gas**

**Q2.Filltheblanks-**

**i.** Burningofwoodandcoal causes**pollution**of air.

**ii.** Aliquidfuel,used inhomeis**LPG**.

**iii.** Fuelmustbeheatedtoits**ignitiontemperature**beforeitstartsburning.

**iv.** Fireproducedbyoilcannotbecontrolledby**water**.

**v.** The lowest temperature at which a combustible substance catches fire is known as **IgnitionTemperature.**

**Q3.Answerinoneortwoword –**

**i. Nametwosubstanceshavinglowignitiontemperature.**

Ans-Paper andwhitephosphorus.

**ii. Namesomegaseousfuels.**

Ans-Naturalgas,petroleumgas,biogasandcoalgas.

**iii. Whichisthemostcommonfireextinguisher?**
Ans.Themostcommonfireextinguisheris water.

**iv. Which gas is produced due to incomplete combustion of fuel?Answer:**CarbonMonoxide.

**Q4.ShortAnswer questions–**

**i. Whyistheuseofdieselandpetrolasfuelsinautomobilesbeingreplacedby CompressedNaturalGas(CNG)inbigcities?**

**Ans.**Itis because CNGproducesharmfulproducts inverysmallamountandisacleanerfuel.

**ii. Ifyouholdapiece ofironwirewithapairoftongsinsideacandleflame or aBunsenburnerflame,whatwillyouobserve?Willitproduceaflame?**

**Ans.**Iron wirewillbecomeredhotand glow. It willnotproduceaflame.

**iii. Crackeronignitionproducessound.Why?**

**Ans.** Cracker bursts with the liberation of great amount of heat, light, gases and sound. This is known asexplosion.

**iv. People usually keep Angethi/burning coal in their closed rooms during winter season. Why is itadvisedto keep thedooropen?**

**Ans.**Due toinsufficientavailabilityofoxygen intheclosed roomcarbonmonoxidegas isproducedwhichcankill personssleepinginthatroom.

**v. Listconditionsunderwhichcombustioncantakeplace.**

**Ans.**Conditionsunderwhich combustioncantakeplaceare as follows:

**a.** Airoranyothersupplyof oxygen.

**b.** Heat, toreachtheignitiontemperature.

**c.** Fuel,maybesolid,liquidorgas.

**vi. Whyarefiresproducedbyburningoilnotextinguishedbypouringwater?**

Ans - Water is heavier than oil. So, it sinks below the oil, and oil keeps burning on top. Thus, water isalsonot suitableforfiresinvolvingoil and petrol.

**Q5.LongAnswerquestions–**

**i. Givetwoexampleseachforasolid,liquidandgaseousfuelalongwithsomeimportantuses.**

**Ans.Typesoffuels**
Solidfuel–Coal,wood,etc.

Liquidfuel –

Keroseneoil,petroletc.Gaseousfuel–

CNG,LPG etc.

**Uses**
Coal–coal hasbeen usedasanenergyresource,primarilyburnedfor theproductionofelectricityandheat,and is alsoused forindustrial purposes,such as refining metals.

Wood - Wood fuel can be used for cooking and heating, and occasionally for fueling steam engines andsteam turbines that generate electricity. Wood may be used indoors in a furnace, stove, or fireplace, oroutdoorsinafurnace,campfire,orbonfire.

Keroseneoil–

Fuelforstoves,lampsetc.Petrol-For

runningvehicles.

LPG– Fuelforindustryetc.

**ii. ExplainhowtheuseofCNGinautomobileshasreducedpollutioninourcities.**

**Ans.** CNG produces harmful products like sulphur di oxide, oxides of nitrogen etc. in very small amountsas compared to petrol and diesel. That is why pollution in our cities is reduced by using CNG. CNG is acleanerfuel.

**iii. Givereasons.**
**(a) Waterisnotusedtocontrolfiresinvolvingelectricalequipment.**
**(b) LPGisabetterdomestic fuelthanwood.**
**(c) Paper by itself catches fire easily whereas a piece of paper wrapped around an aluminium pipedoesnot.**

**Ans.(a)** Waterisnotused tocontrolfireproducedbyelectricalequipmentbecausewater isagoodconductorof electricityandmayresultinelectricshockto thepersonextinguishingthefire.

**(b)** LPG is a substance which is readily available. It is cheaper than wood and burns easily in air atmoderate rate. It does not produce fume and ashes as wood do. Moreover LPG can be stored andtransportedeasilyand conveniently.

**(c)** Paper catches fire easily because of its low ignition temperature, but when it is wrapped around analuminium pipe, the ignition temperature does not meet as the heat supplied is transferred to thealuminiumpipeleavingthepaperunburnt.

**iv. Explainhow$CO_2$isabletocontrolfires.**

**Ans.** Carbon dioxide being heavier than oxygen covers the fire like a blanket. Since the contact betweenfuelandoxygeniscutoff,thefire iscontrolled.Moreover itlowersdownthetemperatureofthefuel.Theaddedadvantageofcarbondioxideisthatinmostcasesitdoes notharm theelectricalappliances.

**v. Whichzoneofaflamedoesagoldsmith useformeltinggold andsilverandwhy?**

**Ans.**The goldsmithusestheoutermostzoneofa flamewithametallicblowpipe formeltinggoldandsilver.

The flame in outermost zone has the highest temperature and provides sufficient amount of heat to meltgoldand silver.

**vi. In an experiment 4.5 kg of a fuel was completely burnt. The heat produced was measured to be180,000kJ.Calculatethecalorificvalueofthefuel.**

**Ans.** Calorific value of a fuel = Total heat produced/total mass

burnt.Here,mass offuel=4.5kg.

Heat produced=180,000kJ.

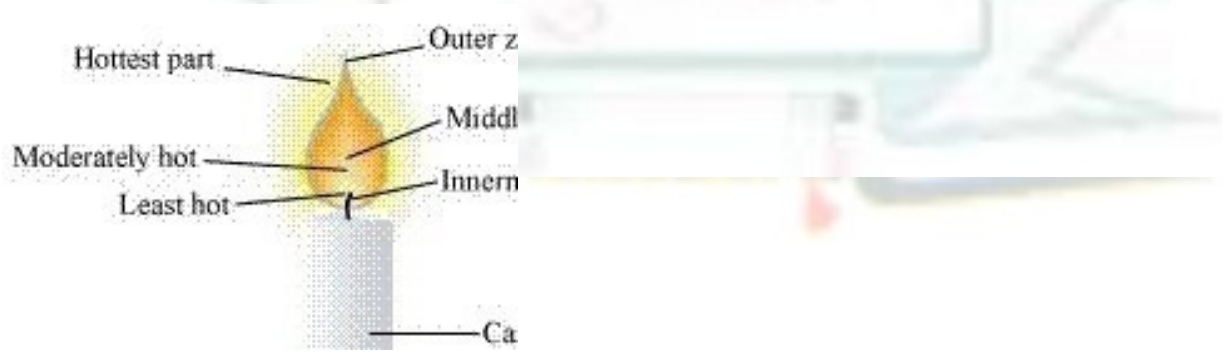
Therefore,calorificvalueoffuel= 180,000/4.5kg=40,000kJ/kg.

**vii. Cantheprocess ofrustingbecalledcombustion?Discuss.**

**Ans. In rusting,** iron using oxygen and water, gets oxidized and is rusted out. It is a slow process whichdoes produce heat at a very slow rate. It includes iron as a fuel,oxygen and also produces heat much like acombustionprocess.Sotheprocessofrustingissomewhat similarto combustion.

**viii. Explainwithlabelleddiagramofcandleflame.**

**Ans.** There are three different zones of a flame – innermost zone (dark zone), middle zone (luminouszone) and outer zone non-luminous zone. The innermost zone of a flame is black in colour due topresenceofunburnt vapours ofthecombustiblematerial.



**HOTS**

**i. Abida andRameshweredoinganexperimentin whichwaterwastobeheatedinabeaker.Abida kept the beaker near the wick in the yellow part of the candle flame. Ramesh kept the beakerinthe outermostpartoftheflame.Whosewaterwillgetheatedin ashortertime?**

**Ans.**The water ofRamesh'sbeaker willgetheatedina shortertimebecause theoutermostpartoftheflameis thehottest.

**ii. It isdifficulttoburnaheapofgreenleavesbutdryleaves catchfireeasily.Explain.**

**Ans.** Green leaves contain lot of water. So, when we try to burn green leaves, water contained in theleavescools thecombustiblematerials, sothatitstemperatureisbroughtbelowitsignitiontemperature.Thispreventstheburningofgreenleaves.

In case ofdryleaves, water isabsentinthemsoburningprocessstart asthetemperatureisraised abovetheignition temperatureand theleaves catchfireeasily.

**iii. Whyfood iscalledfuelforourbody?**

**Ans-**Foodiscalledfuelfor ourbodybecause inourbodyfoodisbrokendownbyreactionwithoxygenandheatisproduced.

**ACTIVITY**

**Make two paper cups by folding a sheet of paper. Pour about 50 mL of water in one of the cups.Heatboththecupsseparately witha candle.Whatdo youobserve?**

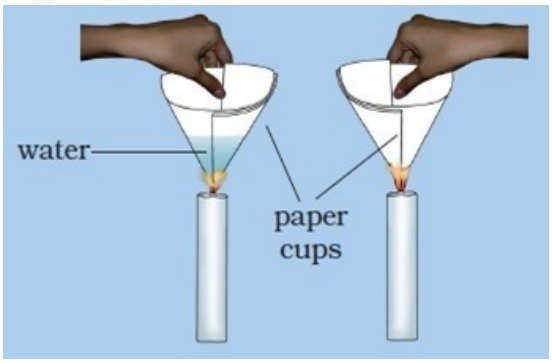
a. **Whathappenstotheemptypapercupandwhy?**
b. **Whathappensto thepapercupwithwater andwhy?**
c. **Doeswaterinthiscupbecomehot?**

**Ans -** (a) The empty paper cup catches fire easily and starts burning because the ignition temperature ofpaperreaches quickly.

(b) Whenweheatthepaper cupcontainingwater,thentheheatsuppliedtothepaper cupistransferredtowaterinside itbyconduction.So,inthepresence ofwater,theignitiontemperature ofpaper reached, andhencethepapercupdoesnotcatchfire.

cupisnot

(c) Yes,thewaterinthispapercup becomeshotgradually.



## CH–7CONSERVATIONOFPLANTSANDANIMALS

- **Biodiversity:** Occurrence of innumerable number of different types of organisms and the whole range of their varieties (biotypes) adapted to different climates, environments and areas.
- Wildlife sanctuary, national park and bio-sphere reserve are names given to the areas meant for conservation and preservation of forest and wild animals.
- Biodiversity refers to the variety of living organisms in a specific area.
- Plants and animals of a particular area are known as the flora and fauna of that area.
- Endemic species are found only in a particular area.
- Endangered species are those which are facing the danger of extinction.
- Red Data Book contains a record of endangered species.
- Migration is the phenomenon of movement of a species from its own habitat to some other habitat for a particular time period every year for a specific purpose like breeding.
- We should save, reuse and recycle paper to save trees, energy and water.
- Reforestation is the restocking of destroyed forests by planting new trees.
- **Flora:** Different types of plants belonging to an area. Example: Silver ferns, sal, teak, mango, etc.
- **Fauna:** All animals found in an area. Example: dog, frog, insects, bull, jackal, etc.
- **Endemic Species:** Species of plants and animals found exclusively in a particular area. These are not naturally found anywhere else.
- **Extinct Species:** Species of plants and animals which have already been lost. Example: Dodo, Indian cheetah, Pink-headed duck, etc.
- **Threatened Species:** Species that is liable to become extinct if it is not allowed to realise its full biotic potential by removed the caused of threat.
- **Type of Threatened Species:**
  (i) **Endangered Species:** A species of animal or plant that is seriously at risk of extinction. Example: Indian rhinoceros, Asiatic lion, Asiatic wild ass, etc
  (ii) **Vulnerable Species:** A vulnerable species is a species of animals or plants which are likely to become endangered unless something changes. Example: Chinkara deer and black buck, golden langur, etc
  (iii) **Rare Species:** Species whose population are originally small and scattered in the world.

- **National Parks:** Protective areas reserved exclusively for the betterment of the wildlife. These are established at the approval of legislature.
  Example: Hazaribagh National Park in Jharkhand, Desert National Park in Rajasthan, etc.

- **Sanctuaries:** Hunting prohibited areas set up by government are known as sanctuaries. These are only for the protection of wild animals. Example: Jaldapara in Madarihat (West Bengal), Keoladeo Ghana in Bharatpur (Rajasthan)

- **Migration:** The regular, periodic, two way movements of birds and some animals from their place of residence to some other place along well defined routes. It is linked to seasonal factors, breeding, shortage of foods, etc. The Bharatpur bird sanctuary is known for the migratory birds.

**Q1.Tickthecorrectoption–**

**i. Deforestationmeans**

(a) Plantingmoretrees

(b) Designingaforest

(c) Demandingaforest

(d) Clearingof forestsandusingthatlandforotherpurposes.

**Ans-(d)Clearingof forestsandusingthatlandforotherpurposes.**

**ii. Illeffectofdeforestation isit**

(a) Increasestemperatureoftheearth

(b) Increasespollutionlevel

(c) Increases$CO_2$levelofatmosphere

(d) Alloftheabove

**Ans-**(d)**All oftheabove**

**iii. Increasedlevel ofcarbondioxideintheatmospheretraps theheat raysreflectedbytheearthcausingan increasein thetemperatureon theearth.Thisis**

(a) Localwarming

(b) Housewarming

(c) Global warming

(d) Countrywarming

**Ans-(c)Globalwarming**

**iv. Partoftheearthwhichsupportslifewherelivingbeingsexists iscalled _____**

(a) Atmosphere

(b) Biosphere

(c) Biology

(d) Biodiversity

**Ans-(b)Biosphere**

**v. Speciesofplantsandanimalswhicharefoundexclusivelyinaparticulararеaare called**

(a) Endemicspecies

(b) Exoticspecies

(c) Localspecies

(d) Specificspecies

**Ans-(a)Endemicspecies**

**Q2.Filltheblanks–**

**i.** **RedDataBook** istheSourcebookwhichkeeps a recordofalltheendangeredanimalsandplants.

**ii.** Theprocessofconversionoffertilelandsintodesertsisknownas**Desertification.**

**iii.** Aplacewhereanimalsareprotectedintheir naturalhabitatiscalled**WildlifeSanctuary.**

**iv.** Birdsthattravellongdistancestoovercomeharshconditionsareknownas**migratorybirds.**

**v.** .Animalswhosenumbersarediminishingtoa levelthattheymightfaceextinctionareknown asthe **endangeredanimals.**

**vi.** Migratorybirds flytofar awayplacesbecauseof**climatic**changes.

**Q3.Answerinoneortwo word–**

**i. Whichactwasaimedatthepreservationandconservationofnaturalforestsin India?**

Ans-ForestConservationAct

**ii. Whichoneofthefollowingspeciesisnotincludedunderthe'RedList'?**

**Ans-**Endemic

**iii. IndianForest(conservation)Actcameintoeffectinwhichyear?**

Ans-1927

**iv. WhichplantisendemictoPachmarhiBiosphereReserve?**

Ans–WildMango

**v. TheRedDataBookwasoriginallypreparedbywhom?**

Ans-IUCN( InternationalUnionforConservationofNature)

**vi. WhenwasProject Tigerwaslaunched?**

Ans-1973

**Q4.ShortAnswer questions–**

**i. Definethefollowingterms–**

**a) Flora:**Different typesofplantsbelongingtoan area.Example:Silverferns, sal,teak,mango,etc.

**b) Fauna:**Allanimalsfoundinanarea. Example:dog, frog,insects,bull, jackal,etc.

**c) Endemic Species:** Species of plants and animals found exclusively in a particular area. These are notnaturallyfound anywhereelse.

**d) ExtinctSpecies:**Species ofplantsandanimalswhichhavealready beenlost.Example:Dodo,Indiancheetah,Pink-headedduck, etc.

**e) Sanctuaries:** Hunting prohibited areas set up by government are known as sanctuaries. These are onlyfor the protection of wild animals. Example: Jaldapara in Madarihat (West Bengal), Keoladeo Ghana inBharatpur(Rajasthan).

**f) Migration:** The regular, periodic, two way movements of birds and some animals from their place ofresidencetosomeotherplacealongwell definedroutes.It islinkedtoseasonal factors,breeding, shortageoffoods, etc. TheBharatpurbirdsanctuaryisknownfor themigratorybirds.

**g) National Park :** Areas reserved for wild life where they can freely use the habitats and naturalresources.

**h) Biosphere Reserve :** Large areas of protected land for conservation of wild life, plant and animalresourcesand traditional lifeofthetribals livingin thearea.

**ii. NamethefirstReserveForestofIndia.**

**Ans**.SatpuraNationalParkinMadhyaPradeshisthefirstReserveForestofIndia.

**iii. WhatisanEcosystem?**

**Ans.**An ecosystem is made of all the plants, animals and microorganisms in an area along with non-livingcomponents suchas climate, soil, riverdeltasetc.

**iv. Sometribal dependsonjungle.How?**

**Ans-**Sometribalsliveinthejungle. Jungle provides themfoodandprotection.Thatiswhy;theyarefullydependent upon theforests.

**Q5. LongAnswerquestions–**

**i) Whatisbiodiversity?**

**Ans.** Biodiversity a portmanteau of "biological diversity," generally refers to the variety and variability oflife on Earth. It specifically refers to the variety of organisms existing in the Earth, their interrelationshipsandalsotheirrelationship with theenvironment.

**ii) Whyarewildlifesanctuaries importantforconservationofplantsandanimals?**

**Ans.**Awildlife sanctuaryisa space thatissetasideexclusivelyfortheuse ofwildanimals,whichareprotected when they roam or live in that area. These are protected areas under government mandatewhere human activities like plantation, cultivation, grazing, falling of trees, hunting and poaching areprohibitedcompletely.

**iii) Whyareendemicorganismsingreater dangerofbecomingextinct?**

**Ans.** Endemic organisms are confined to a limited geographical area. They cannot adapt or live outsidetheir natural habitat. Any disturbance to their habitat will adversely affect them. Henceforth they are ingreater dangerofbecomingextinct.

**iv) Whyshouldwesavepaper?**

**Ans.** To prevent deforestation, save energy and water needed for manufacturing the paper. Chemicalsused to manufacture the paper also cause pollution. Anything we can do to save paper will help reducethe amount of trash going into landfills, and it will also reduce energy use and pollution associated withmanufacturing,transporting,andrecyclingnewpaperproducts.

Perhaps most importantly, when we save paper, we reduce the need to cut down trees to make new paper.Recyclingofpaperisgoodforthe environmentand itwill savemoretrees.

**v. WhatisVanMahotsav? Whostarteditandwhen?**

**Ans -** Van Mahotsav is an annual tree-planting festival in India. This movement was initiated in the year1950 by India's Union Minister for Agriculture, Kulapati Dr. K. M. Munshi. It has gained immensenational importance and every year, millions of saplings are planted all across India in observation of theVanMahotsavweek.

**vi. Whatwillhappenif.**

**(a) Wegooncuttingtrees.**
**(b) Thehabitatofananimalisdisturbed**
**(c) Thetoplayerof soil isexposed**

**Ans.(a)**If wegooncuttingtrees,thenfollowingsituationwillarrive:

(i) Theclimate change will affecttheenvironmentduetoglobalwarmingand therewillbenorain.
(ii) Thesoilwillbecome infertiledue toregularfloodingoftopsoil.

**(b)** If the habitat of an animal is disturbed, the animal may not be in position of getting its natural habitataswellasfood.

**(c)** Removal of top layer of soil by floods and heavy winds will expose the lower hard and rocky layers.Thissoil hasless humusandless fertility.

**HOTS**

**i.Whydoesitmatterif aspecies goextinct?**

**Ans -** When a species go extinct, with it the whole food web get disturbed due to inter-relationship andinteractionbetweenorganisms.The species oforganismswhichmight havebeen dependentontheextinctspecies for food may also get extinct due to starvation until it get an alternate option. If the dependentspecies shift its choice of food on another species then there might be a competition for food with otherspecies.

**ACTIVITY**

**i. Plant at least five different plants in your locality during this academic year and ensure theirmaintenancetillthey grow.**

**ii. Give yourbittohelpenvironment ,Promise yourself that this year you will giftplants toyourfriendsandrelatives ontheirachievements,oronoccasionslikebirthdays.Askyourfriendstotakepropercareoftheseplantsand encouragethemtogiftplantsto theirfriendson suchoccasions.**

**iii. Collectsomemoreinformationaboutsome otherCampaigns/Projects launchedby GovernmentofIndia toprotectthreatenedspecies. Writeintable-AnimalandProject name.**

- **Cell:** The smallest structural and functional unit of an organism, which is typically microscopic and consists of cytoplasm and a nucleus enclosed in a membrane.


- All organisms are made of smaller parts called organs.
- Organs are made of still smaller parts. The smallest living part of an organism is a ‘cell’.
- Cells were first observed in cork by Robert Hooke in 1665.
- Cells exhibit variety of shapes and sizes.
- Number of cells also varies from organism to organism.
- Some cells are big enough to be seen with the unaided eye. Hen’s egg is an example.
- Some organisms are single-celled, while others contain large number of cells.
- The single cell of unicellular organisms performs all the basic functions performed by a variety of cells in multi cellular organisms.
- The cell has three main parts, (i) the cell membrane, (ii) cytoplasm which contains smaller components called organelles, and (iii) the nucleus.

- **Cell membrane**: The basic component of a cell. The cytoplasm and nucleus are enclosed within cell membrane. There is an outer thick layer in cells of plants called **cell wall**.
  - **Cytoplasm**: The jelly-like substance present between the cell membrane and the nucleus.

Various organelles present in the cytoplasm are:

(i) Mitochondria
(ii) Plastids (present only in plant cell)
(iii) Endoplasmic reticulum (ER)
(iv) Ribosome
(v) Lysosomes
(vi) Vacuole
(vii) Golgi body
(viii) Centrosome (present only in animal cell).

- **Nucleus**: Nucleus is separated from cytoplasm by a nuclear membrane. It is generally spherical in the centre of the cell.
- **Nuclear membrane:** Nucleus is separated from the cytoplasm by a membrane called the nuclear membrane.
- **Nucleolus:** Nucleus contains a still smaller round body known as nucleolus.
- **Chromosomes:** Nucleus contains thread-like structures called chromosomes. These carry genes and help in inheritance or transfer of character from the parents to the off springs
- Cells without well organised nucleus, i.e. lacking nuclear membrane, are called **prokaryotic cells.**

- Plant cells differ from animal cells in having an additional layer around the cell membrane termed cell wall.
- Coloured bodies called plastids are found in the plant cells only. Green plastids containing chlorophyll are called chloroplasts.
- Plant cell has a big central vacuole unlike a number of small vacuoles in animal cells.
- **Size of cells**: The size may be as small as a millionths of a metre or may be as large as a few centimetres. Size of the cells has no relation with the size of the body of the animal or plant. It is related to its function.

**Q1.Tickthecorrectoption–**

**i. Largestcellvisibletounaidedeyeis**

a)hen'segg b)ostrichegg c)bacteria'scell d)nervecell

**Ans-b)ostrichegg**

**ii. Whichofthefollowingis notamajorcomponenetofprotoplasm?**

a)hydrogen b)nitrogen c)sulphur d)Oxygen

**Ans-c)sulphur**

**iii. Thewhitepartofeggiscalled**

a)yolk b)albumen c)cytoplasm d)noneofthese

**Ans-b)albumen**

**iv. Agroupof similarcellsperformingaspecificfunctioniscalled**

a)organ b)tissue c)cellorganelle d)noneofthese

**Ans-b)tissue**

**Q2.Filltheblanks–**

**i.** Thegreenplastidsarecalled**chloroplasts.**

**ii. Plasmamembrane/Cellmembrane**istheoutermostlayerofananimalcell.

**iii.** Thetermcellwascoinedby**RobertHooke.**

**iv. Lysosomes**areknownas"suicidebagsofthecell".

**v. Cells**areknownasbuildingblocksoflife.

**vi. Organ**isformedbycollectionof tissues.

**Q3.Indicatewhetherthefollowingstatementaretrue(T)orfalse(F).**

**i. Unicellularorganismshaveone-celledbody.True**

**ii. Musclecellsarebranched. True**

**iii. Thebasic livingunitofanorganismisanorgan.False**

**iv. Amoebahasirregularshape. True**

**v. CellwallispresentinPlantcellonly.True.**

**Q4. Answerinoneortwo word–**

**i. Nametheinstrumentusedtoobservecells.**

**Ans.**Microscope.Ithelpsustoseeminuteobjectsclearly.

**ii. Inacell, wherearethegeneslocated?**

**Ans.**Nucleus/chromosomes.

**iii. AmoebaandParameciumbelongtowhichcategoryoforganisms?**

**Ans**.UnicellularandEukaryotic/Protozoan.

**iv. Whichpartofthecellcontainsorganelles?**

**Ans–**Cytoplasm.

**v. Givetwoexamplesof unicellularanimals.**

**Ans–**AmoebaandParamoecium

**vi. Whichcellsinourbodygrow anddivideallthrough thelife?**

**Ans-**Cells oftheskin.

**Q5.ShortAnswer questions–**

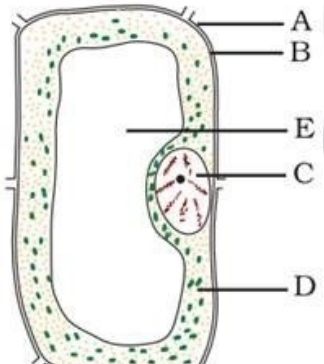
**i. Whatarethefunctionsofcellwallinplantcells?**

**Ans.**Cellwallprotects thecellcontents, givesshapetothecell.

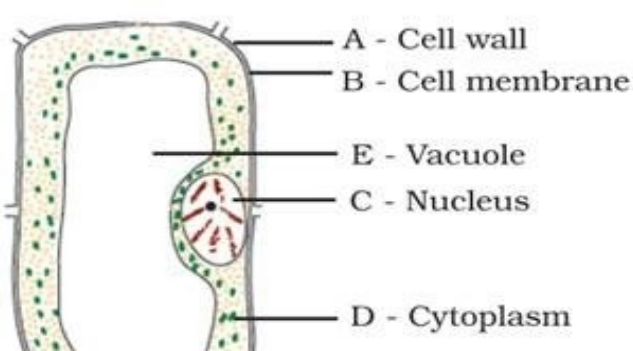
**ii. Wedonotsenseanypainwhenweclipournailsorcut ourhair. Why?**

**Ans.** Nails and hair are both made up of dead cells. They do not have nerve cells. Hence we don't feel thepainwhentheyarecut.

**iii. LabelthepartsAtoEinthegivendiagram.**

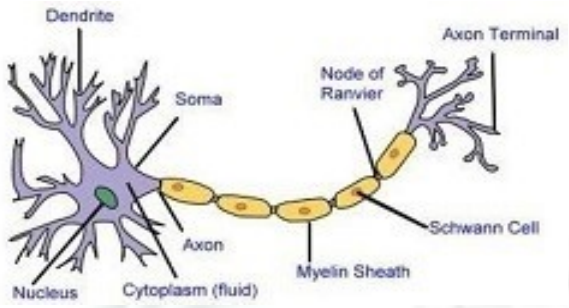



**Ans.**



**iv. Makeasketchofthehumannervecell.Whatfunctiondonervecellsperform?**

**Ans.**Nervecell-




**Function of Nerve cells:** The nerve cell receives and transfers the messages, thereby helping to controlandcoordinatetheworkingofdifferentpartsofthebody.

**v. Whichpartofthecellcontainsorganelles?**

**Ans.**Cytoplasmcontainsorganellesofthecell.

**vi. Statethedifferencebetweeneukaryotesandprokaryotes.**

**Ans. (i)** Eukaryotes have well-organized nucleus with nuclear membrane while prokaryotesdonot havewell organizednucleus.

(ii)Prokaryoticcell isgenerallysmallerin sizethaneukaryoticcells.

**vii. Canunicellularorganisms beseenwiththenakedeye?**

**Ans-**Unicellularorganismscan onlybe viewedwiththehelpofamicroscope.

**viii. Whyaremitochondriaknownasthe“powerhouseof thecell”?**

**Ans-** Mitochondriaisknownasthepowerhouseof thecellbecause theyperform thefunctionofrespirationand providethecell with energy.

**Q6.LongAnswerquestions–**

**i. Whydoplantcellshaveanadditionallayersurroundingthe cell?Whatisthislayerknownas?**

**Ans**. As plants, cannot move from one place to another, they need protection against variations intemperature,windspeed, atmosphericmoistureetc. Therefore, forprotectionplantcellshaveadditionalprotective layers. This layer is called the cell wall. Plant cells have an additional layer surrounding thecellwall.

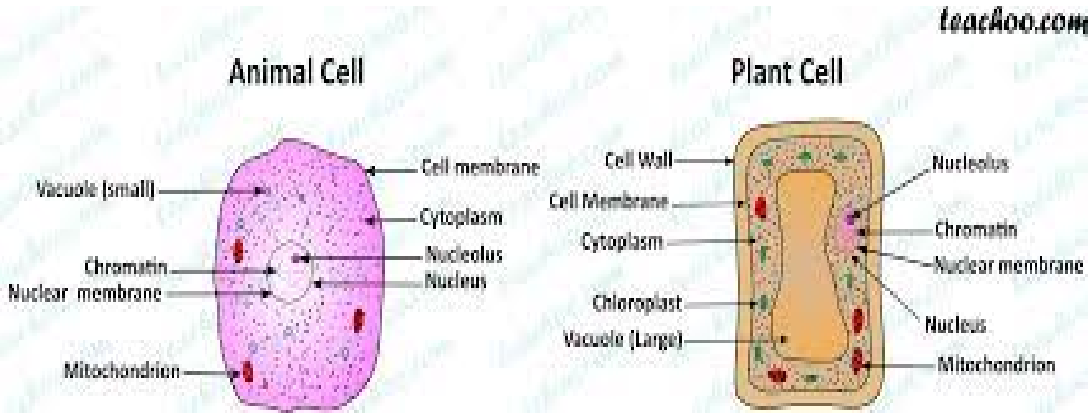
**ii. Writeshortnotesonthefollowing.**

**(a) Cytoplasm** **(b)Nucleusofacell**

**Ans. (a) Cytoplasm:** It is a fluid that fills the cell and occurs between the plasma membrane and thenucleus. Cell organelles such as mitochondria, ribosomes, Golgi bodies, etc. are suspended in thecytoplasm.The cytoplasmhelpsintheexchangeofmaterialsbetweencellorganelles.

**(b) Nucleus of a cell:** The nucleus is a spherical structure generally present at the centre of a cell. It isknown as brain of the cell as it controls the activities of cells. The nucleus is composed of nuclearmembrane,nucleous andchromosomes.

**iii. Makesketchesofanimalandplantcells.Statethreedifferencesbetweenthem.**




| PlantCells | Animalcells |
|---|---|
| (i) The outermost covering is a cell wall and it is madeofcellulose. | (i)Theoutermostcoveringof animalcellistheplasmamembrane. |
| (ii)Plastidsare present inplantcells. | (ii)Plastidsare absentinanimalcells. |
| (iii)Largevacuolesarepresentinplantcells. | (iii) No or very small vacuoles are present inanimalcells. |
| (iv)Itlackscentrosomesandlysosomes. | (iv)Theyhavecentrosomes orlysosomes. |

**iv. Wherearechromosomesfoundinacell?Statetheirfunction.**

**Ans.**Chromosomesarefoundinthenucleusofthecell.Thesearethread-likestructuresthatcarry genes.Genes contain information necessary for the transfer of characteristics from the parents to the offspring.Thus,chromosomesplayanimportant roleintheinheritanceofcharacteristics.

**v. 'Cellsarethebasicstructuralunitsoflivingorganisms'.Explain.**

**Ans.** All organisms are made up of cells. They have different designs, shapes and sizes in the livingorganism. All the life processes take place inside a cell. Many similar cells aggregate togather tomaketissue. So many tissues are organised to form organ and finally many organs are organised toformasystem. Sowecansaythat cellsarebasicunits of livingorganisms.

**vi. Explainwhychloroplastsarefoundonlyinplantcells?**

**Ans.** Chloroplasts are found only in plant cells. They contain a green pigment called chlorophyll. Thisgreen pigment is important for photosynthesis in green plants. This chlorophyll pigment traps solarenergyandutilizesittomanufacture foodfortheplant..Nophotosynthesisoccursinanimals.So,theydonotcontainchloroplast.

**HOTS**

**i. Paheli wants to know if the structure of the nucleus is the same in cells of plants, animalsandbacteria.**

**Ans–**No,the nucleusisnotthesameinplantsanimalsandbacteria inplants andanimalsthenucleusishighlyorganisedandin bacteriathenucleus is not organised.

**ii. Boojhowantstoknowwhyplantcellsneedcellwalls?**

**Ans -** The **plant cell wall** provides definite shape, strength, rigidity. It also provides protection againstmechanical stress and physical shocks. It helps to control **cell** expansion due to the intake of water.Alsohelpsinpreventingwaterloss from the**cell**.

**ACTIVITY**

**i. Take a clean tooth pick, or a matchstick with the tip broken. Scrape inside of your cheekwithouthurting it. Place it in a drop of water on a glass slide. Add a drop of iodine and place acoverslip over it. Alternatively, add 1-2 drops of methylene blue solution. Observe it under themicroscope. You may notice several cells in the scraped material (Fig. 8.6). You can identify thecellmembrane,thecytoplasmandnucleus.Acellwallis absentinanimalcells.**

**ii. Visit a laboratory for senior secondary students in your school or in a neighbouring school.Learn about the functioning of a microscope in the laboratory. Also observe how a slide isobservedunderthemicroscope.**

**iii. Talk to the senior biology teacher in your school or a neighbouring school. Find out if there arediseases which are passed on from parents to the offspring. Find out how these are carried andalsoifthesediseases canbetreated.Forthis you canalsovisita doctor.**

## CH–9REPRODUCTIONIN ANIMALS

**Reproduction** is a process in which the organisms produce the young ones of their own kind.

- There are two modes by which animals reproduce. These are: (i) Sexual reproduction, and (ii) Asexual reproduction

### Sexual Reproduction

- Reproduction resulting from the fusion of male and female gametes is called **sexual reproduction.**
- The reproductive organs in the female include ovaries, oviducts and uterus.
- The reproductive organs in male include testes, sperm ducts and penis.
- The ovary produces female gametes called ova and the testes produce male gametes called sperms.
- The fusion of ovum and sperm is called **fertilization**. The fertilized egg is called a **zygote**.
- Fertilization that takes place inside the female body is called internal fertilization. This is observed in human beings and other animals such as hens, cows and dogs.
- Fertilization that takes place outside the female body is called external fertilization. This is observed in frogs, fish, starfish, etc.
- The zygote divides repeatedly to give rise to an embryo.
- The embryo gets embedded in the wall of the uterus for further development.
- The stage of the embryo in which all the body parts are identifiable is called foetus.
- Animals such as human beings, cows and dogs which give birth to young ones are called **viviparous** animals.
- **Oviparous Animals**: Animals that lay eggs are called **oviparous** animals, e.g., frogs, lizards, butterflies, etc.
- The transformation of the larva into adult through drastic changes is called **metamorphosis**.

### Asexual Reproduction

- The type of reproduction in which only a single parent is involved is called asexual reproduction.
- In hydra, new individuals develop from buds. This method of asexual reproduction is called **budding.**
- Amoeba reproduces by dividing itself into two. This type of asexual reproduction is called **binary fission**.

**Q1.Tickthe correctoption –**

**i. Internalfertilisationoccurs**

a)Infemalebody. b) Outside female
c)Inmalebody d) bodyOutsidemalebo dy

**Ans–a)Infemale body**

**ii. Atadpoledevelopsintoanadultfrogbytheprocessof**
a)Fertilisation. b) Metamorphosis c).Embedding d)Budding

**Ans–b)Metamorphosis**

**iii. Thenumberofnucleipresen t inazygoteis**
a)None b)Two c)One d)Four

**Ans–c)One**

**iv. Afterfertilisation,theresulting cellwhichgivesrisetoanew individualisthe**
(a)embryo (b)foetus (c)ovum (d)zygote
**Ans–d)zygote**

**Q2.Filltheblanks–**

**i.** Inhumans, thedevelopmentoffertilised eggtakesplaceinthe**Uterus.**

**ii.** Inhumanbeings,afterfertilisation,thestructurewhich getsembeddedinthewallofuterus is**foetus.**

**iii.** Reproductionbybuddingtakesplace in**hydra**

**Q3.Mark'T'ifthestatement istrue and'F'ifitis false.**

**i. Oviparousanimalsgivebirthtoyoungone..False**

**ii. Eachspermisasinglecell. True**

**iii. Externalfertilisationtakesplaceinfrog. True**

**iv. Anewhumanindividualdevelopsfromacell calledgamete.True**

**v. Egglaidafterfertilisationismadeupof a singlecell. True**

**vi. Amoebareproduces bybudding. False**

**vii.Fertilisationisnecessary eveninasexualreproduction. True**

**viii. Binaryfissionisamethodofasexualreproduction. True**

**ix. Azygoteisformedasaresultoffertilisation. True**

**x.An embryoismade upofasinglecell. Fals**

**Q4.ShortAnswer questions–**

**i. Definetheterms.**

**a) sexual reproduction:-**Reproduction resulting from the fusion of male and female gametes iscalled**sexual reproduction.**

**b) Fertilization**:-Thefusionofovumandspermis called**fertilization**.

**c) Zygote**:-Thefertilizedeggiscalled a**zygote**.

**d) Binary fission** :-Amoeba reproduces by dividing itself into two. This type of asexual reproduction iscalled**binaryfission**.

**e) Budding**:-Inhydra, newindividualsdevelopfrom buds.Thismethodof asexualreproductioniscalled**budding.**

**f) Metamorphosis** :-The transformation of the larva into adult through drastic changes iscalled**metamorphosis**.

**g) Viviparous** animals :-Animals such as human beings, cows and dogs which give birth to young onesarecalled **viviparous** animals.

**h) OviparousAnimals**:Animalsthatlayeggsarecalled **oviparous**animals,e.g., frogs,lizards,butterflies,etc.

**ii. Stagesinthelifecycleofsilkwormaregivenbelow. Writetheminsequentialorder.**

**Pupa, Silkworm, Egg,**

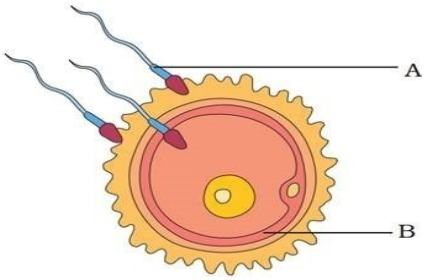
**SilkmothAns.**Silkworm,Egg,Pupa,S

ilkmoth

**iii. WhatdoesFig.represent?**

**Ans**.Thefigure showsan*Amoeba*undergoingbinaryfissionwithadividingnucleus

**iv. Observethefigureandanswerthe questionsthatfollow.**




**(a) LabelAandB.**

**(b) Identifytheprocess.**

**(c) Whathappensduringthisprocessandwhatisformed?**

**Ans.**(a)A-sperm;B-ovum (egg)

(b) Fertilisation

(c) Sperm nucleusfuseswiththeeggnucleus toformthezygote.

**v. Whyonlymale gameteshaveatail?**

**Ans.**Because theyaremotileandreaches the non-motilefemale gamete bymovementwiththehelpoftail.

**vi. Whatismetamorphosis?Giveexamples.**

**Ans.**Thedrasticchangewhichtakesplace duringthedevelopmentofan animaliscalledmetamorphosis. Theanimalsthatundergoesmetamorphosisare

**a.** Silkworm(egg->caterpillar->pupa->adult)

**b.** Frog(egg -->tadpole-->adult)

**vii. Differentiatebetweeninternalfertilisationandexternalfertilisation.**

**Ans.**

| Internal fertilisation | External fertilisation |
|---|---|
| (i) The fertilisation takes place inside the female body.<br><br>(ii) Example- human beings, hen, dog etc. | (i) The fertilisation takes place outside the body of female.<br><br>(ii) Example- frog, fish etc. |

**Q5.LongAnswerquestions–**

**i. Whatistheimportanceofreproduction?**

**Ans.**Reproductionplaysavitalroleinthelife oflivingbeingsbyensuringthecontinuationofspeciesgenerationaftergeneration.It ensuresthe continuation ofracesforseveral generations

**ii. Hensandfrogsarebothoviparousexhibitingdifferenttypesoffertilisation.Explain.**

**Ans.**Hen isanoviparous animalwithinternalfertilisation. Thefertilisedegg developsintoanembryoinsidethebody.However,thedevelopmentof chick fromtheembryo takesplaceoutsidethe body.

Frogs are oviparous in which both fertilisation and development of embryo and young ones occur outsidethebody.

**iii. Howcanwesaythatfishexhibitsexternalfertilisation?**

**Ans.** Female fishes release eggs into water and male fish releases sperms. Sperms swim randomly inwater and comes in contact with the eggs. The nucleus of the sperm moves into the egg and fuses with it.Sincefertilisationoccursinwater, outsidethefemale body,itis externalfertilisation.

**iv. Explaintheimportanceofreproductioninorganism.**

**Ans.** The production of a new individual from parents is known as reproduction. Reproduction is veryimportant as it ensures the continuation of similar kinds of individuals, generation after generation. If thisprocessdo notexist,thegenerationoflivingbeings willbevanishedfromtheearth.

**v. Describetheprocessoffertilisationinhumanbeings.**
**Ans.** In human beings, sexual reproduction occurs. In this process, the fusion of male and female gametestakes place. Male individual produce sperms in testes and female produce ovum in ovary. Duringcopulation, sperms are released by the male into the vagina of female from where the sperms movetowardsthefallopian tube inthefemalereproductive system.Femalerelease oneovumeverymonth inthe middle of menstruation cycle which travels towards the fallopian tube. The released sperm reaches thefallopian tube. The fusion of male gamete ( sperm ) and female gamete ( ovum ) takes place in fallopiantube.Thefusion ofmaleand femalegametesis calledfertilisation.

**vi. GivetwodifferencesbetweenazygoteandFoetus**

**Ans.**Whenfertilisationtakesplace,the nucleiofthesperm andtheeggfusetoformasingle nucleus,whichresultsintheformation ofafertilized egg orzygote.

Zygote now begins to develop into an embryo. The embryo continues to develop in the uterus andproduces body parts such as hands, legs, head, eyes etc. The stage of the embryo in which all the bodypartscanbeidentifiediscalledfoetus.

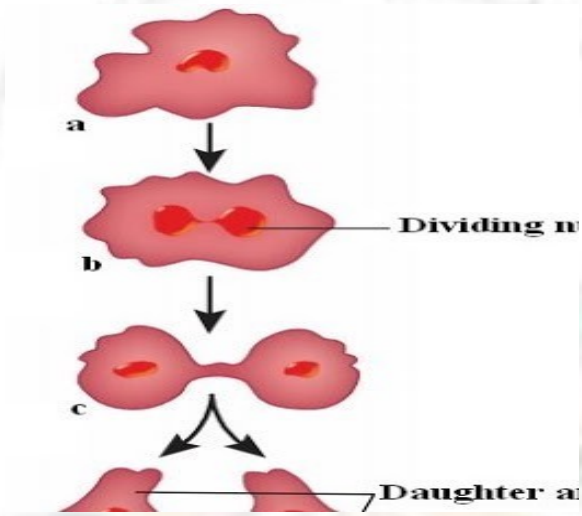
**vii. Defineasexualreproduction.Describetwomethodsofasexualreproductioninanimals.**

**Ans.**Thetypeofreproductioninwhichonlyasingle parentisinvolvediscalledasexualreproduction.

Asexual reproduction takes place in very small animals like Hydra and microscopic organisms likeAmoeba.

**Budding**- New individual develops as a outgrowth from a single parent. In hydra a small bulge called buddevelopsinto newindividuals.


**Binary fission**- The division of the nucleus into two nuclei . This is followed by division of its body intotwo,eachpartreceivinga singlenucleus.Finallytwoamoebaeareproducedfromoneparentamoeba.




**HOTS**

**i. Inmarkets,eggsof birdsareavailable butnevereggsof dogs.Why?**

**Ans.** This is due to that fact that birds like hen give birth to their young ones by laying eggs whereas indogsthemother givesbirthto theyoungonesandhenceareknownasviviparous.

**ii. Theeggsoffrogs donothaveshellsfor protection,yettheyaresafe inwater.How?**

**Ans.**Ajelly-likelayercoverstheeggsoffrogsandprovidesprotectionfrompredators.

**iii. Whydofishandfrogslayeggsinhundredswhereasahenlaysonlyoneeggata time?**

**Ans** Animals like frogs and fish lay hundreds of eggs and release millions of sperms. But the entire eggsdo not get fertilized and develop into new individuals. This is because the eggs and sperms get exposed towatermovement,windandrainfall.Also,there are otheranimalsinthepondwhichmayfeedoneggs. **Whereas**,incaseofa**hen**,internalfertilizationtakesplaceandhencethesurvivalofthebaby which**would**hatchfromthe**egg**hasmuchhigherrates of survivalascomparedtothoseincaseofa **frog**.Hence,**hen** produces**onlyoneegg**.