ACADEMIC SESSION 2021-22

BIOLOGY

SMART SKILLS

TABLE OF CONTENTS

Useful References:
These are online resources that can be referred to for all the topics of grade VIII • http://www.britannica.com • Biology 4 kids.com • www.niaid.nih.gov • www.microbiologyonline.org.uk • www.bbc.co.uk/bitesize/ks3/science • Cbse-notes.blogspot.in • www.slideshare.net

SYLLABUS

BIOLOGY

First Term Syllabus:

APRIL-MAY:

- **Chapter 2:** Microorganisms: Friend and Foe
- **Chapter 1:** Crop production and management (from handout)
- **Chapter 8:**Cell-Structure and functions

JULY-AUG

- **Chapter 8:** Cell structure and function–continued.

SEP:

- **First Term Exams**

Second Term Syllabus:

SEP-OCT:

- **Chapter 7:** Conservation of plants and animals. (Holidays Homework)
- **Chapter 9:** Reproduction in animals

NOV- DEC:

- **Chapter 9:** Reproduction in animals (contd)
-

JAN:

- **Chapter 10:** Reaching the age of adolescence

FEB:

- **Chapter 10:** Reaching the age of adolescence (contd)
- **Revision**

MAR:

- **Second Term Examination**

Chapter - 1

CROP PRODUCTION AND MANAGEMENT

AGRICULTURE

The science that deals with the growth of plants and animals for human use is called *agriculture*. Agriculture includes-

- Soil management- the cultivation of soil
- Crop farming- growing and harvesting of crops.
- Horticulture- growing and harvesting of fruits, vegetables, flowers and decorative plants
- Animal husbandry- the breeding and raising of livestock including poultry

The land where plants are cultivated is known as *fields*.
Plants grown in large quantities in field are known as *crop plants or crops*.
Based upon the seasons, the crops are divided into two types- summer crops called *kharif crops* and winter crops called *rabi crops*.
Kharif crops are grown during summer between June/July and harvested by September/October. Rice, groundnut, maize, cotton , pulses are some common kharif crops.
Rabi crops are grown in the winter between October/November and harvested by March or April. Wheat, barley, mustard, potato and peas are some common rabi crops.

The tasks that a farmer follows are called agricultural practices. The major steps involved in this process are-

- Preparation of soil
- Selection and sowing of seeds
- Addition of manure and fertilizers
- Irrigation
- Protection from weeds and pests
- Harvesting
- Storage

Preparation of soil:

Ploughing or tilling involves loosening and turning of soil using a tool or an implement called the plough. Then the soil is leveled.
Loosening of the soil-

1. Allows the roots to breathe easily
2. Helps the roots to penetrate deeper into the soil.
3. Enables fertilizers to mix uniformly with the soil.
4. Aids the growth of organisms such as earthworms, millipedes, bacteria and fungi.

Sowing of seeds:

Seeds used for sowing should be of good quality, healthy, viable and free of infections. Seeds are sown manually by broadcasting or by seed drills. *Broadcasting* is the scattering of seeds over the soil surface by hand.

Addition of manure and fertilizers:

Plants require nutrients for growth. They get these nutrients from the soil. This can be done either by natural methods or by adding manures and fertilizers to the soil.

Natural methods:

Field fallow: The method of leaving the field without cultivating any crops to replenish nutrients in the soil.
Crop rotation: It involves growing two or more crops alternatively on the same land in the same growing season so that the soil is not depleted of any particular nutrients.

Differences between manures and fertilizers:

Differences between manures and fertilizers:	
Manures	**Fertilizers**
These are natural organic substances that are derived from animal wastes and plant residues.	These are inorganic salts made by humans.
These are rich in humus but not in inorganic nutrients.	These are rich in inorganic nutrients but do not contain humus.
They are quite bulky and difficult to transfer.	They are less bulky and easy to handle.

Irrigation:

Irrigation is the artificial supply of water to farms when needed.
Some of the modern irrigation methods are as follows:

- Sprinkler system
- Drip irrigation

Protection from weed and pests:

Weeding:

- Weeds are unwanted plants that grow along with the crops. They compete with the crops for water, minerals and sunlight and, therefore reduce crop yield.
- Amaranthus is very common weed which grows with almost every crop.

- Weeding can be done manually using a trowel or a harrow or by using a seed drill using certain chemicals called weedicides for example- 2,4-D. some common weedicides are Dalapon, Siniazine and Picloram.

Pests:

- Insects that attack crops and damage them are called pests.
- Pests can be controlled by pesticides which are poisonous chemicals. Pesticides kill pests as well as their eggs and larvae but do not affect the plants.

Harvesting:

- *Harvesting* is the cutting and gathering of the mature crop from the fields.
- *Threshing* is the process of removal of the edible part of grain from the scaly, inedible chaff that surrounds it.
- *Combine harvester* is a farm machine which does both harvesting as well as threshing.
- *Wind winnowing* is a method of separating grain from chaff by throwing the mixture into the air with a winnowing fan.

Storage:

Large scale storage of grains is done in granaries or silos to protect them from pests like rodents, microbes or insects.

Increasing crop produce:

Crop produce can be increased by increasing the land under cultivation, by improvement in the methods of agriculture, and by developing better varieties of crops by plant breeding. *Hybridization* is a technique used for plant breeding in which new varieties with desired characteristics of high yield and resistance to disease, are developed.

Nitrogen cycle:

Air contains about 78% nitrogen. Nitrogen is used by life forms for the formation of protein, amino acids and nucleic acids.

The cyclic process of nitrogen being fixed, used by plants and animals and later returned to the atmosphere is referred to as the nitrogen cycle.

Nitrogen cycle involves the following steps:

- *Nitrogen fixation:* fixing free nitrogen gas of the atmosphere into inorganic compounds by organism such as Rhizobium.
- *Nitrogen assimilation:* converting inorganic nitrogen into usable organic compounds in organisms.
- *Ammonification:* Conversion of organic nitrogen into ammonia.
- *Nitrification:* Ammonia is converted into nitrates in the soil with the help of bacteria.

- *Denitrification:* Conversion of nitrates into nitrogen gas by denitrifying bacteria.

Animal husbandry:

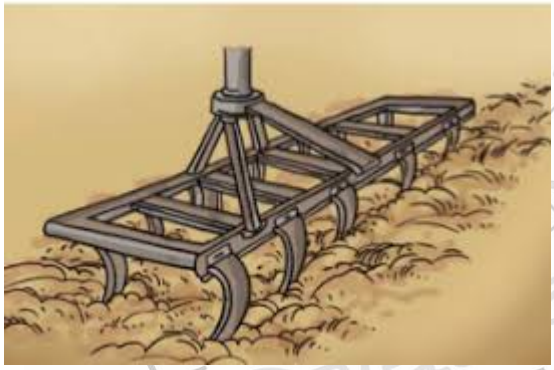
- The breeding, feeding and caring of domestic animals for food and other purposes is called animal husbandry.
- Meat or egg yielding animals such as goat, poultry animals (e.g. chicken, duck and turkey), fish, sheep.
- Milch or (milk yielding) animals such as cow, buffalo, goat and camel.
- Large scale rearing of fish for food is known as *pisciculture*.
- Large scale rearing of honeybee is known as *apiculture*.

Assignment 1.1

LEARNING OUTCOMES:		
Students will be able to recall	the important technical terms used in the chapter	After completing part A of assignment 1.2
Students will be able to analyze and explain	the concept of grain storage	After completing part B of assignment 1.2

A. Choose the correct option

1. Which of the following is the use of the agricultural tool given below



a) It is used to put manure or fertilizer near the roots of trees.
b) It is used to sow the seeds at equal distances.
c) It is useful to remove weeds from the field
d) Both A and B

2. Which of the following crops is grown from October to March?
a) Wheat
b) Pea
c) Mustard
d) All of the above

3. Which of the following methods of irrigation is adopted extensively in areas of acute water shortage?
a) Chain pump system
b) Drip irrigation
c) Sprinkler system
d) Furrow irrigation

B. Read the following passage and answer the questions that follow

Grains obtained by threshing are dried in the open. The dried grains are stored in gunny bags, and placed in properly ventilated cemented halls, known as godowns. Farmers keep dried

grains in jute bags or metallic bins or mud bins. Large scale storage of grains is done in silos and granaries

(A) What is threshing?

(B) Why is it important to dry the grains?

(C) What procedure is followed for large scale storage of grains?

Find Out More:

- **Organic Farming**
- **The harmful fallout of Green Revolution in Punjab**
- **Any Organic product that you have purchased: What does the label say?**
- **Sustainable Farm Practices**

CHAPTER 2

MICROORGANISMS: Friend and Foe

Organisms too small to be seen with the naked eye are called as microorganisms or microbes. These are found everywhere soil, water and air. They can survive in ice cold or hot springs desert and marshy lands. Microbes are classified into five groups: **viruses, protozoans, bacteria, algae and fungi**. Microbes can be unicellular (bacteria, and fungi), filamentous (cells joined end to end; such as algae) or multicellular (fungi).

Microorganisms and Human beings: Microbes play an important role in our lives. Some of the microbes are beneficial while others are harmful and cause diseases.

NITROGEN FIXATION:
It is the process of converting free nitrogen in the atmosphere into compounds of nitrogen. It can be done in two ways:
Atmospheric fixation: by the action of lightening.
Biological fixation: by certain bacteria & blue green algae. Bacterium *Rhizobium* lives in the root nodules of leguminous plants & converts atmospheric nitrogen into compounds of nitrogen.

NITROGEN CYCLE:
Nitrogen is an essential constituent of proteins, chlorophyll, nucleic acids & vitamins. As a result of nitrogen cycle the percentage of nitrogen in the atmosphere remains more or less constant.

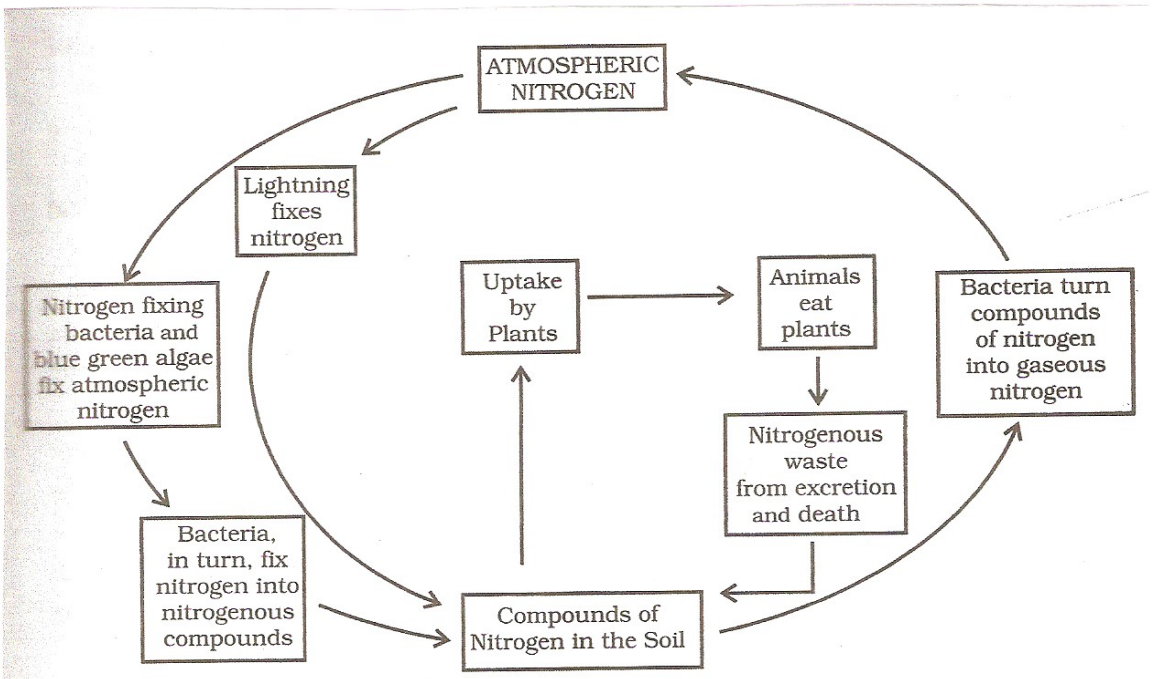


Fig. 2.10 : *Nitrogen cycle*

Assignment 2.1

LEARNING OUTCOMES:		
Students will be able to learn	Different types of Microorganisms and their characteristics	After completing the chapter and attempting from SS Q1 to Q4
Students will be able to evaluate and analyze	Helpful and harmful effects of microbes	After completing the chapter and attempting from SS Q5,6,7,8
Students will be able to apply knowledge, understand and remember	How microbes affect our lives	After completing the research work and SS Q9 and lab activity.
Students will be able to differentiate	Between the terms given	after completing Q11 of assignment 2.1
Students will be able to define	the terms given	after completing Q12 of assignment 2.1

Q1 Give one word answer.

a) Branch of Biology which deals with the study of microorganism.
b) Medicines which kill or stop the growth of these disease causing microorganisms.
c) Disease causing microbes
d) The process of conversion of sugar into alcohol.

Q2 Give reasons:

a) Antibiotic should be taken only on the advice of a doctor.
b) Milk is boiled before it is stored.
c) Breads and cakes are fluffy
d) Fruit juices become sour.
e) Oil is added in the pickles

Q3 Fill in the blanks:

a) _____ only multiply in the body of living organism.
b) _____, _____, _____ and_____ are four major groups of microorganisms.
c) _____ and _____ disease are caused by virus in humans.
d) The full form of AIDS is_____.
e) _____ and _____ are examples of antibiotics.

Q4 Name the causative organisms, their mode of transmission, and carrier of the following diseases, in a tabular form.
Tuberculosis, Measles, Typhoid, Foot and mouth disease and Dengue

Q5 Define the following:
a) Nitrogen fixation
b) Antibiotic
c) Pathogens

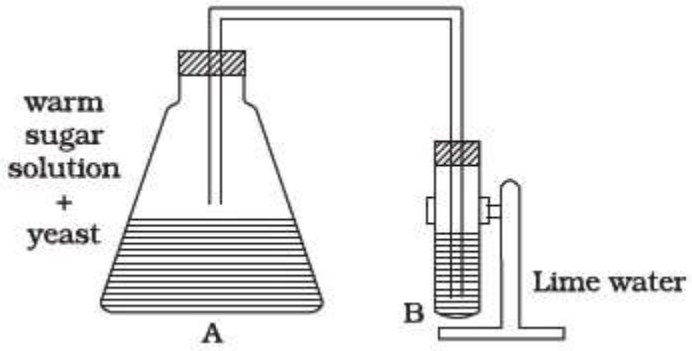
Q6 How does nitrogen, which is a part of living organism, go back into the atmosphere?

Q7 What are the methods of preservation?

Q8 Why the bacteria are called natural scavengers?

Q9 Read the passage and answer the questions that follow
When a disease-carrying microbe enters our healthy body, the body produces antibodies, body fights and kills them by these antibodies. The body also remembers how to fight the microbe if it enters again. The antibodies remain in the body for a long time and protect us from the disease causing microbes.
a) Give one word for disease causing microbe
b) Name the substance which is injected into the body to trigger the body to initiate the above process.

Q10 Observe the set up given in the Fig below and answer the questions



a) What happens to sugar solution in A?
b) Which gas is released in A?
c) What changes will you observe in B when the gas released is passed through it?

Q11 Give one difference between the following pairs taking example under each category:
a) Communicable and non-communicable diseases
b) Microbe and Pathogen
c) Carrier and Vector

Q12 Explain briefly the following:
a) Food Poisoning
b) Nitrogen Fixation

Assignment 2.2

LEARNING OUTCOMES:		
Students will be able to analyze and select	the correct options after reading the content given as paragraph as well as assertion reasoning statements	after completing the assignment 2.2

PARAGRAPH BASED MCQs

A. Microorganisms may be single celled like bacteria, some algae and protozoa multicellular such as many algae and fungi. They live in all types of environments ranging from ice cold climate to hot springs and deserts to marshy lands. They are also found inside the body of animals including humans. Some grow on the other organisms while others exist freely. Some microorganisms are useful to the living organisms and some are very harmfu and cause diseases.Viruses are also microscopic but are different from other microorganisms. They, however, reproduce only inside the cells of the host organism, which may be a bacterium, plant or animal.

1. Which of the following reproduces only inside a host cell?
   a. Bacteria
   b. Virus
   c. Amoeba
   d. Fungus.
2. Name the disease caused by bacteria:
   a. Typhoid
   b. Cholera
   c. Tuberculosis
   d. All of the above
3. In order to take precautionary steps to control dengue, we must take the measures to stop the breeding of:
   a. Aedes mosquito
   b. Fleas
   c. Fire ants
   d. Anopheles mosquito
4. Living organisms which are invisible to the naked eye are called _____
   a. Particles
   b. Molecules
   c. Microorganisms
   d. Macro organisms

B. Microorganisms are too small and are not visible to the unaided eye. Microorganisms are found in air, water and in the bodies of plants and animals. Microorganisms include bacteria, fungi, protozoa and some algae. Viruses, though different from the above mentioned living organisms, are considered microbes.

Some microorganisms are useful for commercial production of medicines and alcohol. Some microorganisms decompose the organic waste and dead plants and animals into simple substances and clean up the environment.

Some microorganisms reside in the root nodules of leguminous plants. They can fix nitrogen from air into soil and increase the soil fertility.Some bacteria 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.

1. The process of conversion of sugar into alcohol by yeast is called:

   a. Fermentation
   b. Alcohol formation
   c. Pasteurisation
   d. All of the above

2. Paheli dug two pits, A and B, in her garden. In pit A, she put a polythene bag packed with some agricultural waste. In pit B, she dumped the same kind of waste but without packing it in a polythene bag. She then covered both the pits with soil. What did she observe after a month?

   1. Waste in pit A degraded faster than that in pit B.
   2. Waste in pit B degraded faster than that in pit A.
   3. Waste in both pits degraded almost equally.
   4. Waste in both pits did not degrade at all.

3. Some plants have nitrogen-fixing bacteria in their root nodules. What are these bacteria called?

   a. Blue green algae
   b. Nitrosomonas
   c. Azotobacter
   d. Rhizobium

4. Some microorganisms are useful for commercial production of medicines

such medicines are called

a. Antiseptic
b. Antibodies
c. Antibiotics
d. All of the above

ASSERTION - REASONING MCQs

A. Assertion: Whenever you fall ill the doctor may give you some antibiotic tablets, capsules or injections such as penicillin. The sources of these medicines are microorganisms.
Reason: Antibiotics treat only bacterial infections.

a) Both Assertion and Reason are true, and Reason is the correct explanation of the assertion.
b) Both Assertion and Reason are true, but Reason is not the correct explanation of the assertion.
c) Assertion is true, but Reason is false.
d) Assertion is false, but Reason is true.

B. Assertion: There are some insects and animals which act as carriers of disease- causing microbes.
Reason: Mosquito is a vector which carries disease causing microorganisms

a) Both Assertion and Reason are true, and Reason is the correct explanation of the assertion.
b) Both Assertion and Reason are true, but Reason is not the correct explanation of the assertion.
c) Assertion is true, but Reason is false.
d) Assertion is false, but Reason is true.

THINGS TO DO:

A. Find Out More:
- Drug Resistant TB-A result of rampant misuse of antibiotics
- Swine FLU, Bird Flu
- Viruses causing Cancer
- Stomach Ulcer-a bacterial Infection

B. Visit to the biotechnology lab to see
- bacterial colonies growing on agar plates
- Root nodules of leguminous plants.

Chapter 7
Conservation of Plants and Animals

AN APPROPRIATE ACTIVITY WILL BE DONE AS A PROJECT FOR HOLIDAY HOME WORK

The existence of a diverse variety of plants, animals, and other living forms is known as **biodiversity** (biological diversity). Existence of plants and animals is **important** due to various reasons:

- roots of the plants help in binding the soil and hence **prevent soil erosion**
- forests are home to numerous plants and animal species,
- forests maintain a balance between the oxygen and carbon dioxide levels in the atmosphere
- forests also play role in the climate , wind and rainfall of the both locally and globally
- Different plants and animals form vital links in food chains and food webs.

Thus for the survival of the mankind and to maintain the natural ecological balance it is necessary to conserve biodiversity.

Following are the **causes of the loss of biodiversity**:

- Increase in human population and use of land for agriculture and urban development leading to large scale destruction of forests resulting in **deforestation**. Consequences of deforestation are many:
- Deforestation results in the change in soil property gradually leading to **desertification**.
- Falling of trees may also result in the increase in the temperature of the earth (**global warming**)
- It also leads a disturbance in the water cycle and less rainfall resulting in drought
- Loss of trees decrease the water holding capacity of the soil. The movement of water from the soil surface into the ground is reduced leading to floods.

ii Killing of animals for their meat, skin and other body parts

iii Pollution of air, water and land adversely affects many plants and animals.

iv Natural disasters like, earthquakes, cyclones etc.

Conserving the biodiversity on earth is the duty of every human being to promote conservation, government and non-government bodies at the international, national and local levels are constantly organizing awareness programs, and issuing rules and regulations to protect the existing forests and wild life. To conserve biodiversity it is necessary to follow certain conservation strategies. These strategies involve establishing protected areas for plants

and animals (Sanctuary, National park and biosphere reserve), restoring ecosystems, and managing already existing plant and animal species.

Terms associated with biodiversity:

Species: a group or a class of animals and plants having certain common and permanent characteristics that clearly distinguish it from other groups.

Flora and fauna: numerous species of plants living in their natural surroundings (habitat) are termed as flora, and the animal species constitute the fauna. Together the flora and fauna form the biodiversity of the place.

Extinct species: species of plants and animals that are no longer existing.

Endangered species: These are at a high risk of getting extinct in their habitat in the near future.

Endemic species: species of plants and animals which are found exclusively in a particular area. A particular type of animal or plant may be endemic to a zone, a state or a country. The following factors affect the natural habitat of endemic species and endanger their existence:

- Destruction of their habitat
- Increasing population
- Introduction of new species

An **ecosystem** is made of all the plants, animals and microorganisms in an area along with non-living components such as climate, soil, rivers etc.

To protect our flora and fauna and their habitats, **protected areas** called sanctuaries, national parks and biosphere reserves have been earmarked. Plantation, cultivation, grazing, felling trees, hunting and poaching are prohibited here. These protected areas include:

Wildlife sanctuary: provides protection and suitable living conditions to wild animals. They are a tract of land with or without lake where wild animals or fauna can take shelter without being hunted. Some of the threatened wild animals like black buck, white eyed buck, elephant, rhinoceros, etc., are protected and preserved in our wild life sanctuaries.

National parks: They are reserves of land, usually owned by governments, which are protected from most human developments. National parks are large and diverse enough to protect whole sets of ecosystem. Tiger is one of the many species which are slowly disappearing from our forests. In a food chain tigers are the top carnivores.

Biosphere reserves: they are areas meant for conservation of biodiversity. **Biodiversity** is the variety of plants, animals and microorganisms generally found in an area. The biosphere reserves help to maintain the biodiversity and culture of that area. The area covered by a biosphere reserve is the largest and it can have a number of national parks and sanctuaries within its area.

Top carnivores are those which are situated at the top of a food chain. They eat many animals but nobody eats them. The removal of a top carnivore can have a serious impact on the ecosystem. Thus, the protection of carnivores is very important. For this the **Project Tiger** was launched by the government in 1973 with the objective to ensure the survival and maintenance of the tiger population in the country.

Red data book is the source book which keeps a record of all the endangered animals and plants. It is compiled and maintained by the International Union of Conservation of Nature and Natural Resources (IUCN).

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. Migratory birds fly for laying eggs as the weather in their natural habitat becomes very cold and inhospitable.

We have already caused tremendous damage to our forests. If we have to retain our green wealth for future generations, plantation of more trees is the only option. **Reforestation** is restocking of the destroyed forests by planting more trees. The planted trees should be of the same species which were found in that forest. The **Forest (Conservation) Act** in our country is aimed at preservation and conservation of natural forests and meeting the basic needs of the people living in or near the forests.

THINGS TO DO:
Find Out More: • Biodiversity Hot Spots • The Himalayan Glaciers • Any Case study to minimize Man Animal Conflict • Chipko Movement • Traditional systems of conservation-Sacred plants and animals

Chapter - 8

CELL: STRUCTURE AND FUNCTION

Assignment 8.1

LEARNING OUTCOMES:		
Students will be able to understand	What are cells, structure of cell and the content of the cell?	After completing the chapter and attempting from SS Q1 to Q3
Students will be able to understand reason and select	The correct option	After completing the chapter and attempting from SS MCQ Q10
Students will be able to get the clarity	Of the concepts.	After completing the chapter and attempting from SS Questions 4,5, 6,7 8,9

1.Fill in the blanks:

a. _____ is called the living substance of the cell.

b. The three main parts of a generalized cell are _____, _____ and _____.

c. An example of human body cell that can change its shape is _____.

d. _____ contain pigments and occur in plant cells only.

e. Chromosomes carry _____ that help in the transfer of characters from parents to the offspring.

f. _____ is the unit of inheritance in living organisms.

g. _____ is a single celled organism.

h. _____ coined the term cell.

i. Nucleus is separated from the cytoplasm by a membrane called_____

j. _____ & _____ are prokaryotic.

2. Indicate whether the following statements are True (T) or False (F). If false, write the correct statement also.

a. Plant cells have smaller vacuoles than animal cells.

b. Organ is the basic structural unit of life.

c. Organisms made of more than one cell are called multicellular organisms.

d. Pseudopodia are found in *Paramecium.*

e. The entire living substance of the cell is called cytoplasm.

f. Tissues form organ systems.

3. a. Name the largest and the smallest cell known. Also mention their respective sizes.

b. Give examples to prove that the shape of a cell is related to its function?

c. What role do the following perform in a cell?

1. Cell wall
2. Nucleus
3. Plastids
4. Chromosomes
5. Vacuole

4 Differentiate between the following pairs:

a. Cell and Tissue

b. Prokaryotic and Eukaryotic cell

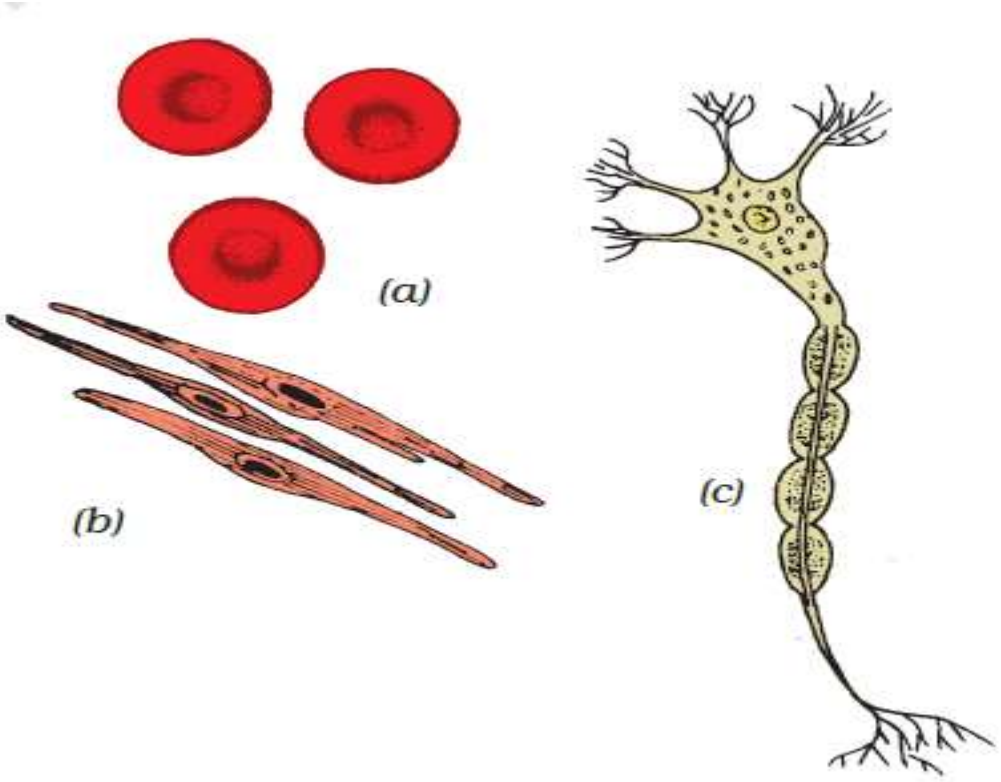
5. Draw neat and well-labelled diagrams of the following

a. Plant cell.

b. Animal cell.

6. What are genes andwhere are they found?

7. Look at the diagrams of the cells given below and answer the following questions:



a. What is the shape of cells in fig. (a)?

b.Figure(c) corresponds to cell responsible for receiving and transferring messages in the human body. Name the cell.

c. Name the cells shown in figure b?

8. Classify the following terms as cell, tissue, and organ and write it in the table below

RBC, heart, hand, blood, nerve cell, WBC, blood vessel, muscle

Cell	Tissue	Organ
.....	.....	.....
.....	.....	.....
.....	.....	.....

9. Fill in the blanks with the words given below:

Nucleus, chromosomes, cell wall, cell membrane, protoplasm, cytoplasm, ribosome, cell organelles

The outermost layer of plant cells is the ___(a)___ beneath which is the ___(b)___. The term ___(c)___ refers to the jelly-like substance containing all the ___(d)___. The ___(e)___ contains thread-like structures called ___(f)___.

10. Choose the correct option

1. Pathogen causing disease spread through

I. BODY CONTACT
II. THE AIR
III. A VECTOR

a) I and II only
b) I and III only
c) II and III only
d) I,II and III

2. Which of the following is the bio control method to check spread of malaria

a) Using mosquito repellants.
b) Rearing fishes
c) Spraying insecticides
d) Using mosquito nets

3. Which of the following processes involves the escaping of nitrogen into the air from decaying matter?

a) Nitrification
b) Denitrification
c) Nitrogen assimilation
d) Nitrogen fixation

4. Read the passage and answer the questions that follow

Cells are mostly round, spherical or elongated in shape. Cells sometimes are quite long. Some are branched. Components of the cell are enclosed in a membrane which provides shape to the cells. Cell wall is an additional covering over the cell membrane to give shape and rigidity to plant cells.

(A) Name the long and branched cell. What function do they perform

(B) Name the membrane that encloses the cell. What other function does it perform besides giving shape to the cell?

(C) Why do plant cells need a cell wall?

Assignment 8.2

LEARNING OUTCOMES:		
Students will be able to analyze and select	the correct options after reading the content given as paragraph as well as assertion reasoning statements	after completing the assignment 8.2

PARAGRAPH BASED MCQs

A. Cell is the structural and functional unit of life. The word cell is derived from the Latin word 'cellula' which means "a little room".Cells are the lowest level of organisation in every life form. From organism to organism, the count of cells may vary. The cell structure comprises individual components with specific functions essential to carry out life's processes. These components include- cell wall, cell membrane, cytoplasm, nucleus, and cell organelles.The organelles performspecialised functions to carry out various life processes. Every organelle has a specific structure and functions.

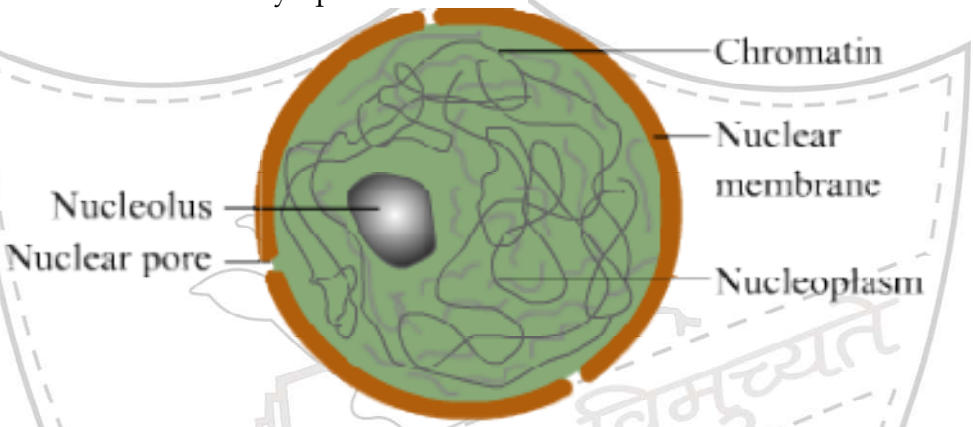
a) Name the scientist who coined the term cell.
   1. Virchow
   2. Robert Hooke
   3. Robert Brown
   4. Schleiden and Schwan

b) _____ is a jellylike substance that is present between the cell membrane and the nucleus.
   1. Cell sap
   2. Cytoplasm
   3. Karyoplasm
   4. Plastids

c) Which of these cell organelles and their functions is correctly matched?
   1. Nucleus- gives shape to the cell.
   2. Chloroplast- Controls all activities.
   3. Cell wall- Synthesize food.
   4. Cell membrane-Allows movement of substances.

d) The main difference between human cheek cells and onion peel cells are-
   1. Presence of cell wall in onion peel cells.
   2. Presence of nucleus in onion peel cells.
   3. Presence of plastids in cheek cells.
   4. Presence of plasma membrane in cheek cells.

B. The nucleus inside the cell is the most noticeable organelle within the eukaryotic cell, and perhaps the most important and defining feature of the eukaryotic cells. Most of the genetic material (DNA) is contained in the nucleus, while a small amount of it is found in mitochondria. The majority of human cells have a single nucleus, although there are several cell types that have multiple nuclei (e.g. osteoclasts) or don't have a nucleus at all (erythrocytes).Nucleus, in biology, a specialized structure occurring in most cells (except bacteria and blue-green algae) and separated from the rest of the cell by a double layer, the nuclear membrane.The nucleus controls and regulates the activities of the cell. Under some conditions, however, the nucleus divides but the cytoplasm does not.



Structure of a Nucleus

a) Name the unit of inheritance in living beings.
   1. Cell Membrane
   2. Genes
   3. Nucleolus
   4. Nuclear Membrane

b) The living component including nucleus and cytoplasm are known as-
   1. Nucleoplasm
   2. Protoplasm
   3. Cytoplasm
   4. Nucleolus

c) The functions of cell are controlled by-
   1. Cell membrane
   2. Nuclear membrane
   3. Nucleus
   4. Tissues

d) Ram observed that the colour of his eyes is brown just like his father, but the texture of his hair is curly like his mother. How is it possible?

1. These are hereditary characteristics transferred from parents to their offspring and controlled by genes.
2. These are naturally visible characters.
3. These are the acquired characteristics.
4. All of the above.

ASSERTION - REASONING MCQs

A. **Assertion (A): Chromosomes are responsible for the transfer of characteristics from parents to offspring.**
Reason (R): Chromosomes are present in the nucleus.

A. Both A and R are true and R is the correct explanation of A
B. A is true but R is false
C. A is false but R is true
D. Both A and R are true but R is not the correct explanation of A

B. **Assertion (A): The nuclear membrane separates cytoplasm and nucleus.**
Reason (R): It prevents the movement of materials between cytoplasm and nucleus.

A. Both A and R are true and R is the correct explanation of A
B. A is true but R is false
C. A is false but R is true
D. Both A and R are true but R is not the correct explanation of A.

Lab Activity

LEARNING OUTCOME:		
Students will be able to observe, identify and draw	different types of cells / microbes shown	after completing the lab activity.

Observe the given slides. On the basis of the observations made try to identify the cells/ organism shown. Also draw a neat diagram of the cell/organism identified.

	NAME OF CELL/ORGANISM	OBSERVATIONS	DIAGRAM
SLIDE1			
SLIDE2			

SLIDE3			
SLIDE4			
SLIDE5			

Chapter - 9

REPRODUCTION IN ANIMALS

Assignment9.1

LEARNING OUTCOMES		
Students will be able to recall	The important keywords/concepts	After completing Q1 and Q2
Students will be able to differentiate	Between the given keywords	After completing Q3
Students will be able to name	The parts of the sperm	After completing Q4.
Students will be able to analyse and reason	The concept of presence of jelly around frogs eggs	After completing Q5.
Students will be able to describe and define	The given concepts.	After completing Q6. 7 and 8.
Students will be able to understand reason and select	The correct option	After completing Q9, 10, and 11.

Q.1 Match the items in Column A with items in Column B.

(A) Foetus	Egg cell
(B) *Hydra*	Frogs
(C) Ovum	Stage when organs can be identified externally
(D) External fertilization	Binary fission
(E) Foetus	Buds

Q.2 Fill up the blanks:

(A) The type of reproduction that involves fusion of male and female gametes is called as_____.

(B) The testes produce male gametes called as_____

(C) The ovaries produce female gametes called as _____.

(D) Fusion of male and female gametes is called as_____.

(E) Sperm and ovum fuse to form _____.

(F) Egg laying animals are called as _____ while those which give birth to young ones are called as _____.

(G) Transformation of larva to an adult is called as_____ _____.

(H) The type of reproduction in which only one parent is involved is _____.

(I) *Hydra* reproduces by_____while *Amoeba* reproduces by_____.

(J) _____ of sperms are produced by the testes whereas a_____ ovum is produced at a time by the ovary.

(K) The first animal to be cloned was a _____.

(L) Each sperm is a _____ cell.

Q.3 Differentiate between

1. Sperm and Ovum (Two points)
2. Internal and external fertilization.
3. Sexual and asexual reproduction.
4. Testis and ovary.

Q.4 Name the parts of the sperm.

Q.5 Give the function of jelly found around the eggs of the frog.

Q.6 Define the following:

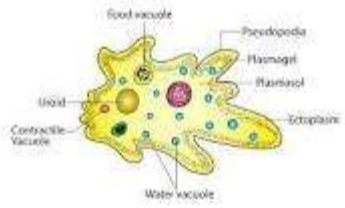
1. Metamorphosis

2. Fertilization
3. Embryo
4. Fetus
5. Viviparous animals
6. Oviparous animals
7. Asexual reproduction
8. Zygote

Q.7 Describe the process of fertilization in frog.

Q.8 Describe the process of reproduction in a hen.

Q.9 The organism shown in the given diagram reproduces by:

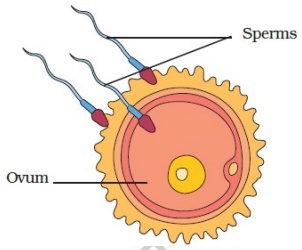


(A) Budding
(B) Fragmentation
(C) Binary Fission
(D) Fusion

Q.10 How is the sex of the unborn child determined?

(A) Sex chromosomes of mother
(B) Sex chromosomes of father
(C) 'X' chromosome of unfertilized egg
(D) All 23 pairs of chromosomes

Q11. Which process is shown in the diagram below?



(A) Metamorphosis
(B) Moulting
(C) Fertilization
(D) Respiration

Assignment9.2

LEARNING OUTCOMES:		
Students will be able to analyze and select	the correct options after reading the content given as paragraph as well as assertion reasoning statements	after completing the assignment 9.2

PARAGRAPH BASED MCQs

A. The embryo is an early developmental stage of animals. In humans the embryo begins to develop about four days after an egg is fertilized. Appearing initially as a tiny mass of cells, it eventually gives rise to the fetus, an obvious human form. In the first days of the embryo's existence; it journeys along the fallopian tube. About one week after conception, it reaches the uterus, which is prepared to receive it with a network of blood vessels and glands. By this time, the embryo has become a fluid-filled sphere of nearly 100 cells. Some of the cells become fingerlike projections that anchor the embryo to the uterus to draw nourishment and oxygen and to rid the embryo of wastes. The anchoring cells secrete a hormone that will prevent the disintegration of the lining; there will be no menstrual period.

a) Which of the following is the site of fertilization in humans?
   a) oviduct
   b) ovary
   c) uterus
   d) both 1 and 2

b) The cell formed after fertilization is called
   e) embryo
   f) fetus
   g) zygote
   h) egg

c) In humans, the development of fertilized egg takes place in the:
   1. Ovary
   2. oviduct
   3. testis
   4. uterus

d) How is a fetus different from an embryo?

ASSERTION - REASONING MCQs

A. **Assertion (A): Hen comes under oviparous animals.**
Reason (R): Oviparous animals give birth to young ones.

a. Both A and R are true and R is the correct explanation of A
b. Both A and R are true but R is not the correct explanation of A.
c. A is true but R is false
d. A is false but R is true

B. **Assertion (A): Sexual reproduction involves fusion of male and female gametes to form embryo.**
Reason (R): Gamete is a single cell that can fuse with another gamete of opposite sex.

a. Both A and R are true and R is the correct explanation of A
b. Both A and R are true but R is not the correct explanation of A.
c. A is true but R is false
d. A is false but R is true

Chapter - 10

REACHING THE AGE OF ADOLESCENCE

Assignment 10.1

LEARNING OUTCOMES		
Students will be able to recall	The important keywords/concepts	After completing Q1.
Students will be able to recognize	hormones with their glands	After completing Q2
Students will be able to name	the given keywords	After completing Q3, Q4, Q5 and Q6
Students will be able to analyse and reason	The given statements	After completing Q7.
Students will be able to differentiate	between the given keywords	After completing Q8
Students will be able to explain	the concept of menstruation	After completing Q9
Students will be able to name and list	The given concepts.	After completing Q10 to Q13.
Students will be able to understand reason and select	The correct option	After completing Q14.

Q.1 Fill in the blanks:

- _____is the period in the life of an individual when the body undergoes changes resulting in reproductive maturity.
- Endocrine glands are also known as _____ glands.
- _____ is the hormone which is responsible for the development of breasts in females.

- Out of _____ pairs of chromosomes in the nucleus of each human cell, two are called _____ chromosomes and are named _____ and _____.
- Hormones secreted by _____ gland stimulate testes and ovaries to produce _____ and _____ hormones respectively.
- _____ gland secretes growth hormones.
- _____ is the male hormone and _____ the female hormone.
- Hormones are secretion of _____ glands.

Q.2 Match the following:

COLUMN A	COLUMN B
Testes	Thyroxine
Adrenal	Growth Hormone
Thyroid	Testosterone
Ovaries	Insulin
Pancreas	Adrenalin
Pituitary	Oestrogen

Q.3 Name the virus responsible for AIDS.

Q.4 Name a food item which is a balanced meal in itself.

Q.5 Name the disease caused due to improper functioning of

a) Thyroid b) pancreas

Q.6 What type of foodstuffs should an adolescent take for blood formation?

Q.7 Give reasons to justify the following statements:

- The voice of adolescent boys becomes hoarse.
- Acne and pimples are more common among adolescents.
- Wall of uterus becomes thick during the first phase of menstrual cycle.
- Chips and tinned food can never replace regular meals.
- We should say "NO" to drugs.
- Adolescents should be careful of what they eat.
- Endocrine glands are called ductless glands.

Q.8 Differentiate between menopause and menarche.

Q.9 What is menstruation?

Q.10 List the secondary sexual characters that develop in boys and girls respectively at puberty.

Q.11 Name the hormone that controls metamorphosis in frogs.

Q.12 Enlist any three ways in which HIV can be transmitted from an infected to a healthy person.

Q.13 Enumerate the steps in menstrual cycle.

Q14. Choose the correct option

1. What is the function of thyroxine hormone in frog?

a) Controls metabolic rate in frog
b) Controls metamorphosis in frog
c) Controls the development of reproductive organs
d) Controls the function of other endocrine glands

2. Which sequence is correct about the menstrual cycle based on the information given below?

- **W-the ovum dies within 24 hours after ovulation**
- **X-the uterus wall thickens with blood vessels**
- **Y-The uterus wall breaks down**
- **Z-The ovary discharges an ovum**

a) Z,X,Y,W
b) Y,W,Z,X
c) X,Z,WY
d) W,Y,X.Z

3. Read the passage and answer the questions that follow

Hormones are chemical substances secreted by**A** glands. They are also known as _____B___ glands. These glands release hormones directly into the blood stream to reach a particular body part known as _____C___.

Hormones control the changes that occur at adolescence. The male hormone called _____ is secreted by the testes at the onset of puberty and cause development of facial hair, chest hair etc. At the onset of puberty in girls, ovaries secrete female hormone or _____ which makes the breast develop..

(A) Identify A , B and C.
(B) Name the male and female hormone
(C) Name the master gland that controls the secretion from testes and ovaries.

Assignment 10.2

LEARNING OUTCOMES:		
Students will be able to analyze and select	the correct options after reading the content given as paragraph as well as assertion reasoning statements	after completing the assignment 10.2

PARAGRAPH BASED MCQs

A. The endocrine system is made up of glands that make hormones. Hormones are the body's chemical messengers. They carry information and instructions from one set of cells to another.The endocrine system influences almost every cell, organ, and function of our bodies.

Endocrine glands release hormones into the bloodstream. This lets the hormones travel to cells in other parts of the body.

The endocrine hormones help control mood, growth and development, the way our organs work, metabolism , and reproduction.
The endocrine system regulates how much of each hormone is released. This can depend on levels of hormones already in the blood, or on levels of other substances in the blood, like calcium. Many things affect hormone levels, such as stress, infection, and changes in the balance of fluid and minerals in blood.

Too much or too little of any hormone can harm the body. Medicines can treat many of these problems.While many parts of the body make hormones, the major glands that make up the endocrine system are the:

- pituitary
- thyroid
- adrenals
- the ovaries
- the testes

a) Glands are small organs located throughout your body that secrete (that means release) substances called:

i. Hormones
ii. Enzymes
iii. Bile
iv. Plasma

b) Which of the following is not part of the endocrine system?
   i. Thyroid
   ii. Adrenals
   iii. Appendix
   iv. Pituitary

c) This gland is sometimes called the master gland, though it is only about the size of a pea:
   i. Pituitary
   ii. Adrenal
   iii. Thyroid
   iv. Pancreas

d) What hormone does the pancreas make?
   i. Insulin
   ii. Adrenalin
   iii. Growth hormone
   iv. Thyroxine

ASSERTION - REASONING MCQs

A. **Assertion (A): Monthly bleeding in women which is called menstruation.**
Reason (R): if pregnancy does not the thickened lining of the uterus is shed off.

a) Both A and R are true and R is the correct explanation of A
b) A is true but R is false
c) A is false but R is true
d) Both A and R are true but R is not the correct explanation of A.

B. **Assertion (A): Change from larva to adult is called metamorphosis.**
Reason (R): In a frog metamorphosis is controlled by thyroxin

a) Both A and R are true and R is the correct explanation of A.
b) A is true but R is false.
c) A is false but R is true.
d) Both A and R are true but R is not the correct explanation of A.

SAMPLE QUESTION PAPER

SAMPLE QUESTION PAPER

Academic Session: 2020-21
Annual-Examination
Subject: Science
Class VIII

Time: 3 Hours **MM:80**

PLEASE NOTE: Science paper have three sections- physics, chemistry and biology. Given here is only the biology section of the complete paper.

SECTION C (BIOLOGY) **MM- 26**

Q1 Choose the correct option in the following questions:

a. Rahul observes a cell under the microscope that does not have a distinct nucleus. The cell that he observes is: 1
   A. A plant cell
   B. An animal cell
   C. A nerve cell
   D. A bacterial cell.

b. Which out of the given statements best describes a unicellular organism? 1
   A. A small group of organisms.
   B. An organism that is able to carry out all its life processes within a single cell.
   C. An organism that relies on other organisms to survive.
   D. A small organism with a variety of parts.

c. Foetus is the stage of the embryo when: 1
   A. The body parts are identifiable
   B. It is a mass of cells
   C. Zygote has just formed
   D. Fertilization has just happened.

d. The part of a sperm which helps in the penetration of ovum is: 1
   A. Tail
   B. Head
   C. Middle piece

D. Nucleus

e. In which of the following organisms, fertilization is not internal? 1
A. Humans
B. Hen
C. Starfish
D. Dog

f. Choose the correct statement: 1
A. Cell membrane surrounds the nucleus.
B. Genes are located on the chromosomes.
C. Cell is located in the nucleus.
D. Both A and C.

g. Human males, with XY chromosomes produce _____ different types of gametes, whereas females with XX chromosomes produce only _____ type of gamete. 1
A. Two, one
B. One , two
C. Three , one
D. Four , one

h. Assertion (A): Pituitary gland is an endocrine gland. 1
Reason (R): It releases its secretion directly into blood.
A. Both A and R are true and R is the correct explanation of A
B. Both A and R are true but R is not the correct explanation of A.
C. A is true but R is false
D. A is false but R is true

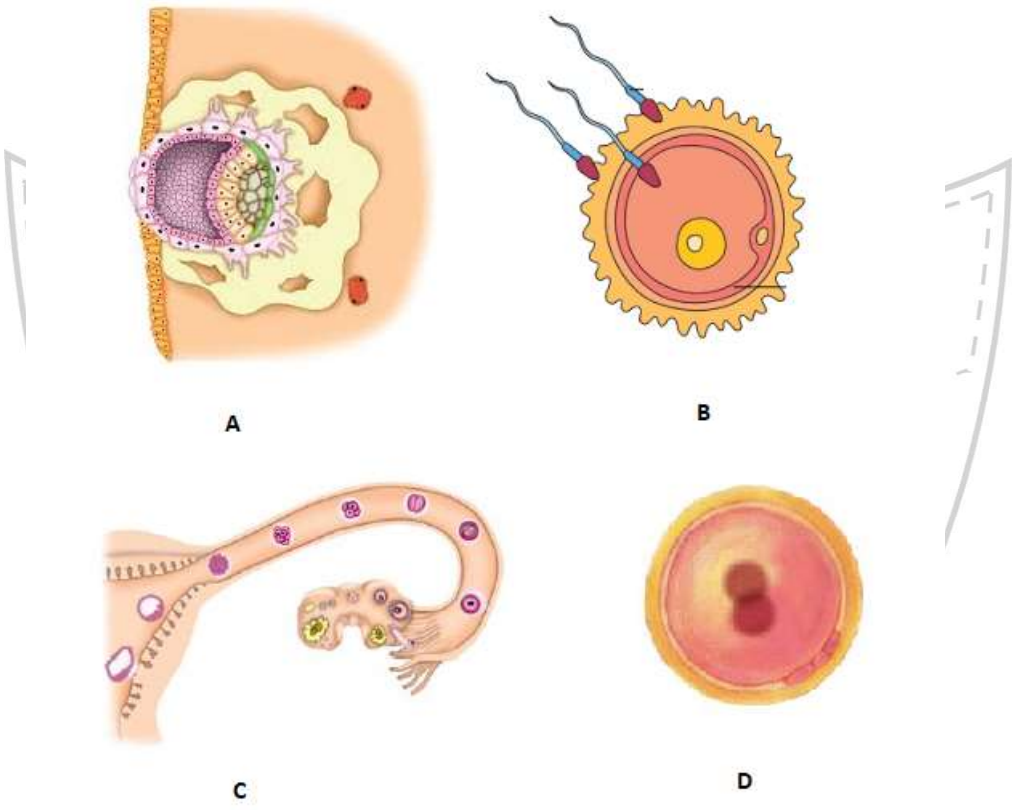
Q2 Define asexual reproduction. Draw the various stages to show the process of budding in *Hydra*. 2

Q3 Give reasons for the following statements: 2
a. In a pond it is observed that tadpoles are unable to show metamorphosis and convert into adult frogs.
b. Junk food, although very tasty should never replace our regular meals.

Q4 a. Define protoplasm. 3
b. List two functions of the nucleus.
c. Animal cells differ from plant cells in a number of ways. What is one specific characteristic that makes their mode of nutrition

significantly different.

Q5 Observe the given figures and answer the questions that follow: 3



a. Identify the above given stages A to D taking place during the development of the human baby.
b. Arrange the stages in the correct sequence of development.

Q6 A. What is a target site? 3 (1+2)
B. Name the hormones which are associated with the following symptoms:
   a. High level of blood sugar.
   b. Goitre in the neck region.
   c. Dwarfism
   d. Prolonged stressful situations.

Q7 a. Why is the appearance of acne and pimples a common problem for teenagers? 5(1+2+2)

b. Differentiate between menarche and menopause. (one difference only)
c. List the events which lead to menstruation in females in case fertilization does not happen.