

Q. No. 2 Part (ii) **DIFFERENCE BETWEEN:**

BACTERIOSTATIC antibiotics	BACTERICIDAL antibiotics
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1. Definition: Antibiotics which inhibit the growth of bacteria are called bacteriostatic.

2. Example:
Tetracycline

3. Mode of Action: They prevent further growth by stopping protein synthesis or folic acid synthesis etc.

1. Definition: Antibiotics which kill the bacteria are called bactericidal.

2. Example:
Cephalosporin

3. Mode of Action: They stop important life processes like synthesis of cell wall to kill bacteria.

Q. No. 2 Part (iii) **COMPARISON OF :**

HYDROPHYTES

1. They have adaptations to remove excess water.

2. Example:

Water lily

3. Cuticle: It is thin.

4. Roots: They have fewer roots

5. Stomata: They have many stomata on the upper epidermis.

XEROPHYTES

1. They have adaptations to store water.

2. Example:

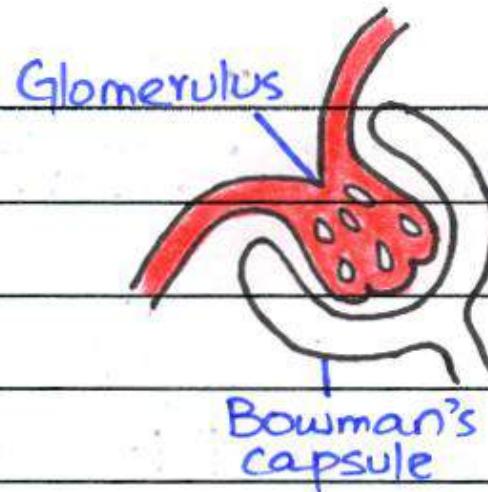
Cactus

3. Cuticle: It is thick.

4. Roots: They have deep and extensively-branched roots.

5. Stomata: They have sunken stomata on lower epidermis in small quantity.

Q. No. 2 Part (iv) Glomerulus and Bowman's capsule are collectively called Renal corpuscle.



a. GLOMERULUS:

Definition: Glomerulus is a part of nephron. It consists of a tuft of capillaries.

Function: As blood pressure is high in the glomerulus, urea, glucose, water, ions etc. enter the bowman's capsule. It is pressure filtration.

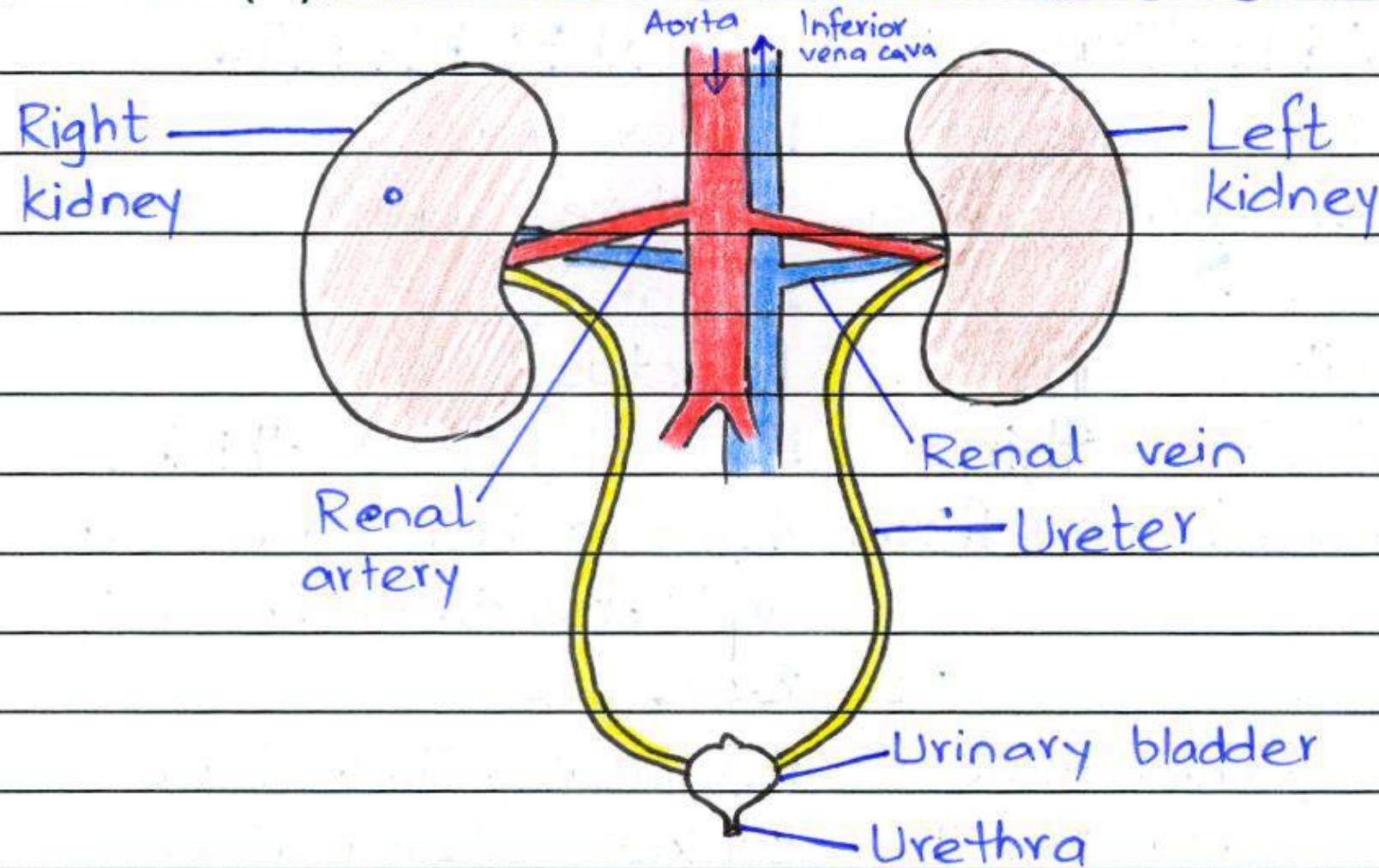
b. BOWMAN'S CAPSULE:

Definition: It is a hollow, cup-shaped structure that surrounds the glomerulus.

Function: After pressure filtration, glomerular filtrate enters bowman's capsule to pass through ^{renal} tubules.

Q. No. 2 Part (vii)

HUMAN URINARY SYSTEM:



Human Urinary System

Q. No. 2 Part (ix)

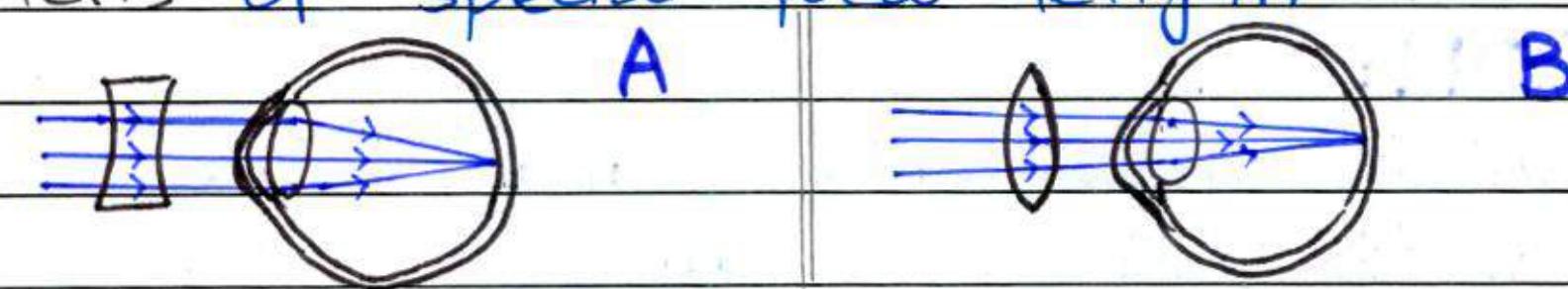
DISORDERS OF EYE:

a. A: Myopia (short-sightedness)

B: Hyperopia (long-sightedness/hypermetropia)

b. A: It can be rectified by using concave lens of special focal length.

B: It can be rectified by using convex lens of special focal length.



c. A: A person with myopia can only see near objects clearly and cannot see far objects clearly.

B: A person with hyperopia can only see far objects clearly and cannot see near objects clearly.

Q. No. 2 Part (xii) Trait: Height of pea plant

P Generation (tall) TT x tt (short)

P Gametes T ↓ t ↓

F₁ Generation Tt (genotype)

All tall (phenotype)

F₁ x F₁

F₁ Genotype Tt x Tt

F₁ Gametes T t T t

		sperms	T	t	
		eggs	T	t	
	T		TT (tall)	Tt (tall)	
	t		Tt (tall)	tt (short)	

F₂ Genotype ratio TT : Tt : tt = 1 : 2 : 1

F₂ Phenotype ratio Tall : Short = 3 : 1

Q. No. 2 Part (xiii)

IDENTIFICATION:

a. It is shoulder joint. It is an example of ball-and-socket (freely moveable) joint.

LOCATION:

b. It is located at our shoulder. It is the joint between scapula (pectoral girdle) and humerus (upper arm bone).

FUNCTION:

c. It allows movements in many planes in all directions. This is because it is a freely-moveable joints and thus allows rotation in many directions and planes.

Q. No. 2 Part (xiv) **TEMPORARY PARASITES:**

Definition: Parasites that visit their hosts periodically and go away after feeding are temporary parasites.

Examples: • Mosquitoes • Leech

ENDO PARASITES:

Definition: Parasites that live inside the body of host are called endo parasites.

Examples: • Tape worm • Liver fluke

COMMENSALISM:

Definition: A symbiotic relationship in which one organism is benefitted and the other is unaffected i.e. neither harmed nor benefitted.

Example: Sucker fish uses its sucker to attach itself to the body of shark/whale for transport to feeding areas.

Q. No. 2 Part (vi)

MICROPYLE:

Micropyle is a small hole in the hilum on seed coat of a seed.

Importance: It allows water absorption in seed to

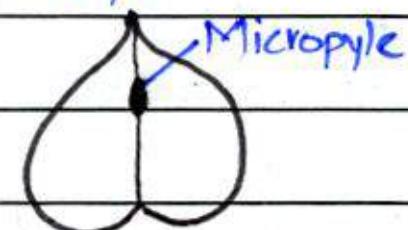
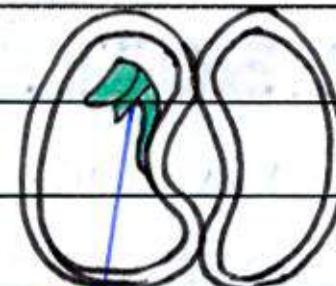
⇒ Start metabolism ⇒ Dissolve food

⇒ Swell and rupture seed coat.

EMBRYO:

It is the baby plant which grows into a new plant. It is present inside seed

Importance: It is the part of seed which grows into a new plant.



Q. No. 2 Part (i) IMPORTANCE OF NEGATIVE

FEEDBACK: Negative feedback is important as:

- The output of the process inhibits process.
- It is homeostatic and stabilizing.
- It is very common in living organisms.

Example:

After meal, our blood glucose level rises which stimulates islets of Langerhans in pancreas to secrete insulin. Insulin speeds glucose consumption of body and stores glucose in the form of glycogen in muscle cells and liver. As blood glucose level returns to normal, insulin secretion also stops.

Normal blood glucose level is output which stops the process i.e. insulin secretion. It is healthy.

Q. No. 2 Part (X) BACTERIAL RESISTANCE AGAINST ANTIBIOTICS:

Bacteria are slowly developing resistance against antibiotics they are repeatedly exposed to.

Causes: ⇒ Over-exposure to drugs

⇒ Misuse of drugs ⇒ Overuse of drugs

Development of Resistance in Bacteria:

by exchanging plasmids during conjugation

Effects: Bacterial resistance is harmful for us.

It gets difficult to treat disease when bacteria have developed resistance against antibiotics as they cannot be killed by antibiotics.

Examples: Antibiotic resistant TB

Q. No. 2 Part (xi) ARTHRITIS:

Causes:

- Decreased lubrication at joints
- Over-weightedness
- Injuries at weight-bearing joints
- Old age
- Improper diet

Symptoms:

- Pain in joints
- Difficulty in moving
- Stiffness at joints
- Swelling of joints
- Inflammation of joints

Treatment:

- Moderate exercise
- Change lifestyle
- Healthy diet
- Anti-inflammatory drugs
- Rest well.

Q. No.3 Part (b) (Page 1/2)

ASTHMA:

Asthma is a form of allergy. It is a chronic inflammatory disease of respiratory tubules.

Causes:

It can be triggered by any allergens:

- * Perfume
- * Dust particles
- * Feather
- * Pollen
- * Particular food
- * Emotional disturbance
- * Cold air

Signs and Symptoms:

They vary from person-to-person.

- * Difficulty in exhaling
- * Narrowing of tubules.
- * Secretion of excessive mucus.
- * Inflammation of respiratory pathway

Preventive Measures:

- * Wear a mask
- * Avoid areas with air pollution.
- * Always carry inhalers with you
- * Know your triggers and avoid them.

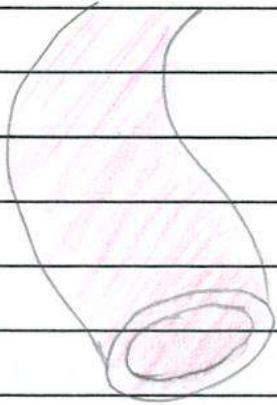
Treatment:

An asthma attack is treated by inhalers which provide quick relief from the attack.

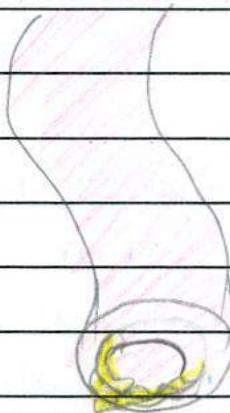
Some people use bronchodilators to treat asthma attack and to widen the respiratory passages.

There are two types of medicines used to treat asthma:

- * Quick-relief
- * Long-term



Normal
bronchiale



Asthma attack

MENDEL'S LAW OF INDEPENDENT ASSORTMENT:

STATEMENT:

"When two contrasting traits are followed in the same cross, their alleles separate during gamete formation independently."

EXPERIMENT:

Gregor John Mendel performed an experiment on the pea plant to prove the law of independent assortment.

He chose two true-breeding pea plants, with seeds:

* Round and Yellow * Wrinkled and Green

In first filial generation, all seeds were round and yellow.

When he crossed two F₁ generation seeds, he got a mix of traits in which ratio between phenotype of seeds of round yellow, round green, wrinkled yellow and wrinkled green was 9 : 3 : 3 : 1 (dihybrid ratio)

As dominant and recessive traits were mixed and there were parental as well as non-parental seeds, Mendel concluded that alleles of contrasting different traits separated independently and met at random fertilization.

(Page 2/2) Traits: Seed shape and Seed colour
 (round is dominant) (yellow is dominant)

P Generation	Round Yellow	x	Wrinkled Green
P Genotype	RRYY		rryy
P Gametes	(RY)		(ry)
F ₁ , Generation	RrYy		
F ₁ , Phenotype	All seeds are round and yellow		
	F ₁	x	F ₁
F ₂ , Genotype	RrYy		RrYy
F ₂ , Gametes	(RY) (Ry) (rY) (ry)		(RY) (Ry) (rY) (ry)

	sperms	RY	Ry	rY	ry
eggs	RY	RRYY	RRYy	RrYY	RrYy
	Ry	RRYy	RRyy	RrYY	Rryy
F ₂ , Generation	rY	RrYY	Rryy	rrYY	rrYy
	ry	Rryy	Rryy	rrYy	rryy

Legend:

- Round green
- ★ Wrinkled green
- Round yellow
- ★ Wrinkled yellow

Phenotypic Ratio Round yellow : Round green : Wrinkled yellow : Wrinkled green
 9 : 3 : 3 : 1

(Section C)

Q. No. Part ()

1. **What is the role of the central bank in a market economy?**

The central bank plays a crucial role in a market economy by managing the nation's monetary system. It is responsible for maintaining price stability, promoting economic growth, and ensuring the availability of credit. The central bank also oversees the banking system, regulates interest rates, and monitors inflation. It acts as a lender of last resort during financial crises and provides liquidity to the economy.

2. **Explain the concept of money supply and its relationship with interest rates.**

Money supply refers to the total amount of money available in an economy at a given time. It is influenced by various factors such as the reserve base, the banking system, and the government. Interest rates are the cost of borrowing money. They are closely related to the money supply because when there is more money available, it becomes easier to borrow, which leads to lower interest rates. Conversely, when there is less money available, borrowing becomes more difficult, leading to higher interest rates.

3. **Discuss the impact of inflation on the economy.**

Inflation is the general increase in prices over time. It can have both positive and negative impacts on the economy. On the one hand, low inflation is generally considered to be good for the economy as it indicates stable prices. However, high inflation can lead to economic instability, reduced purchasing power, and decreased investment. It can also erode the value of savings and investments. Therefore, it is important for the central bank to maintain a stable and predictable inflation rate.

4. **What are the main functions of a central bank?**

A central bank typically has several key functions:

- Monetary Policy:** Setting and implementing policies to control the money supply and interest rates.
- Banker to the Government:** Providing financial services to the government, including printing money and managing its debt.
- Banker to the Banks:** Acting as a lender of last resort and regulating the banking system.
- Stabilization:** Managing the economy to achieve price stability, full employment, and economic growth.
- International Role:** Participating in international monetary affairs and managing foreign exchange reserves.

(Section C)

Q. No. Part ()

1. **What is the role of the central bank in the economy?**

The central bank plays a crucial role in the economy by managing the nation's monetary system. It is responsible for maintaining price stability, promoting economic growth, and ensuring the availability of credit. The central bank also oversees the banking system, regulates interest rates, and monitors inflation. It acts as a lender of last resort during financial crises and provides liquidity to the banking system.

2. **Explain the concept of money multiplier and its significance in the banking system.**

The concept of money multiplier refers to the process by which a single unit of reserves can be multiplied into multiple units of deposits through the banking system. This is achieved through fractional reserve banking, where banks keep only a portion of their deposits as reserves and lend out the rest. The money multiplier is calculated as the reciprocal of the reserve ratio. For example, if the reserve ratio is 10%, then the money multiplier would be 10. This means that a \$100 deposit could potentially be multiplied into \$1,000 in the banking system. The significance of the money multiplier lies in its ability to expand the money supply and stimulate economic growth.

3. **Discuss the various tools used by the central bank to control the money supply.**

The central bank uses several tools to control the money supply, including:

- Reserve Requirements:** The central bank sets reserve requirements for commercial banks, which limit the amount of lending they can do based on their reserves.
- Discount Rate:** The central bank sets the discount rate, which is the interest rate it charges on loans to commercial banks.
- Open Market Operations:** The central bank buys and sells government securities in the open market to influence the money supply.
- Interest Rate Policy:** The central bank sets interest rates for loans and deposits to influence the cost of borrowing and saving.
- Bank Supervision and Regulation:** The central bank oversees the banking system to ensure it operates safely and soundly.

SCOPE OF BIOTECHNOLOGY:

FOOD AND AGRICULTURE:

- Biotechnology is used to make bakery products by fermentation
- Biotechnology is used to make cheese and yogurt by bacteria.
- Biotechnology is used to make alcoholic beverages like ethanol
- Biotechnology is used to make:
⇒ Glycerol ⇒ Formic acid
⇒ Acrylic acid
- Biotechnology is used in food preservation
- Biotechnology is used to make plants pesticide and insecticide resistant
- Biotechnology has reduced the need for fertilizers due to usage of biofertilizers.
- Bio-technology increases crop yield and nutrition
- Biotechnology makes plant drought and cold resistant
- Biotechnology is used to enhance flavour of fruits.

ENVIRONMENT:

- Bacteria are used to clean oil spillage from seas and shores.
- Plastic-eating bacteria are used to reduce plastic waste.
- Bacteria can remove war contaminants like TNT and RDX.
- By genetic engineering, scientists have developed plants that reduce air pollution.

Thus, biotechnology has a large scope in Food and Agriculture, and Environment.

It is the most developing and necessary branch of biology in today's world where we need to enhance and improve our resources to stop over-consumption and remove pollution, malnutrition etc.

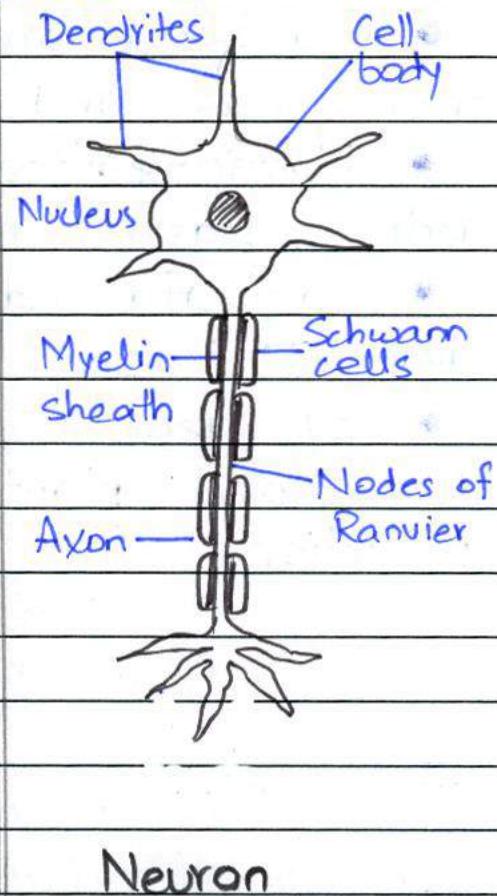
STRUCTURE OF NEURON:

A neuron consists of:

Cell Body: It is the part of neuron that mostly resembles other cells. It contains nucleus, most of cytoplasm and cell organelles.

Dendrites: Extensions of neurons that direct nerve impulses towards cell body.

Axons: Extensions of neuron that direct nerve impulses away from the cell body.



Myelin Sheath: Some axons are covered with fatty insulating layer called myelin sheath. It does not allow nerve impulse to pass through it.

Schwann Cells: Cells of myelin sheath that secrete it are called schwann cells.

Nodes of Ranvier: The microscopic gap between two consecutive schwann cells is called nodes of Ranvier.

Nerve impulses jump from one node to another. These saltatory impulses help to increase speed of nerve impulses.

TYPES OF NEURON:

Neurons have 3 types on the basis of function.

a. MOTOR NEURON:

Structure: It has many dendrites and one axon

Function: It transmit impulses from central nervous system to effector.

b. SENSORY NEURON:

Structure: It has one dendron and many axons.

Function: It transmits impulses from receptor to central nervous system.

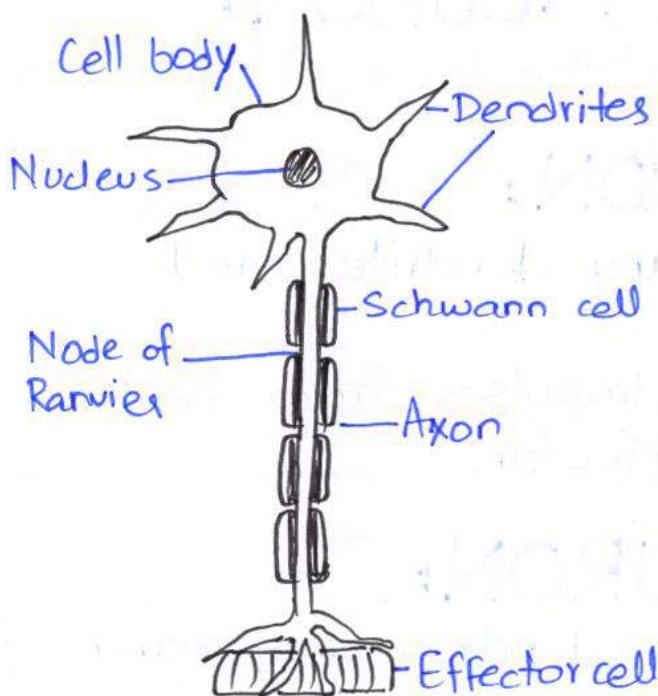
c. INTERNEURON:

Structure: It has many dendrites and many axons.

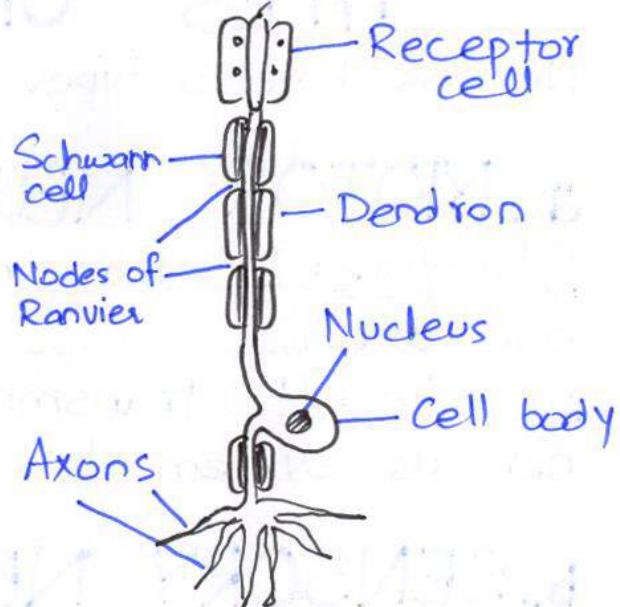
Function: It is present in central nervous system. It forms synapses to convey nerve impulse from sensory to motor neuron.

(Section C)

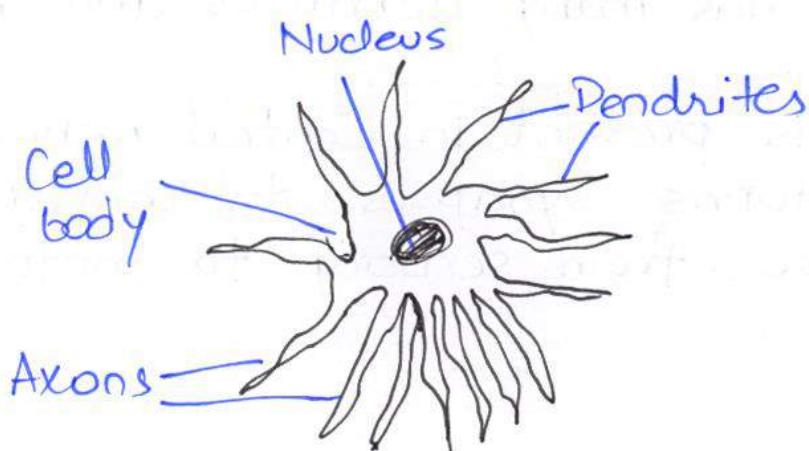
Q. No. 5 Part (2)



Motor Neuron



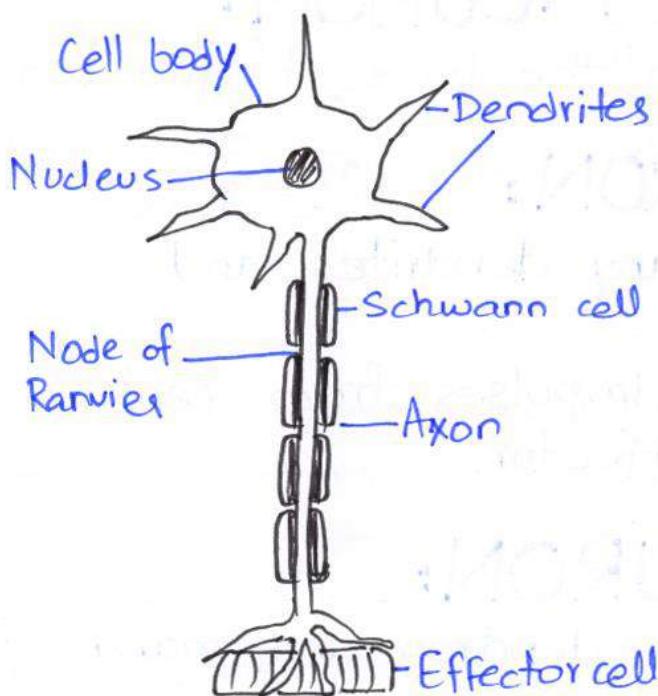
Sensory Neuron



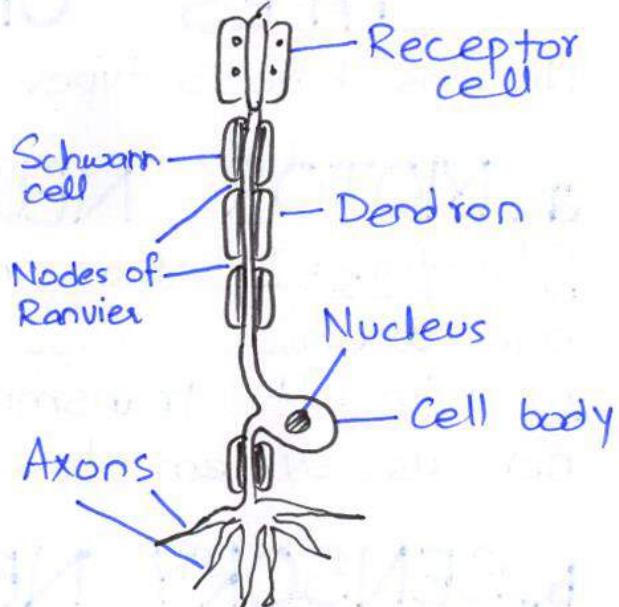
Interneuron

(Section C)

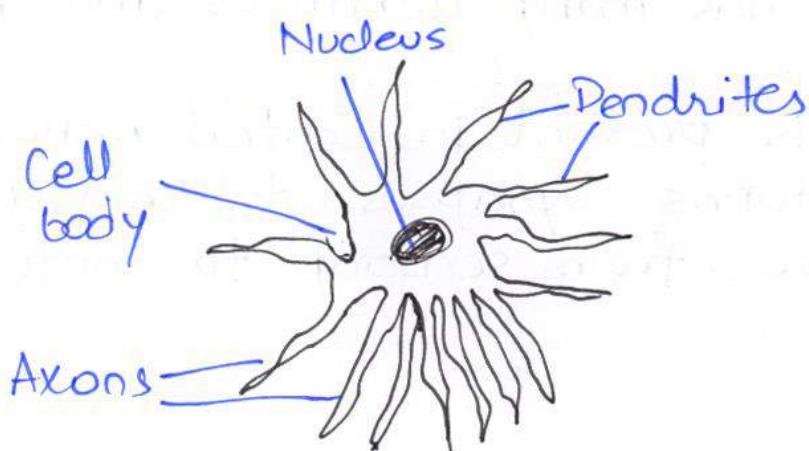
Q. No. 5 Part (2)



Motor Neuron



Sensory Neuron



Interneuron