

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

BACTERIOSTATIC antibiotics

BACTERICIDAL antibiotics

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

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

2. Example:

Tetracycline

2. Example:

Cephalosporin

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

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:

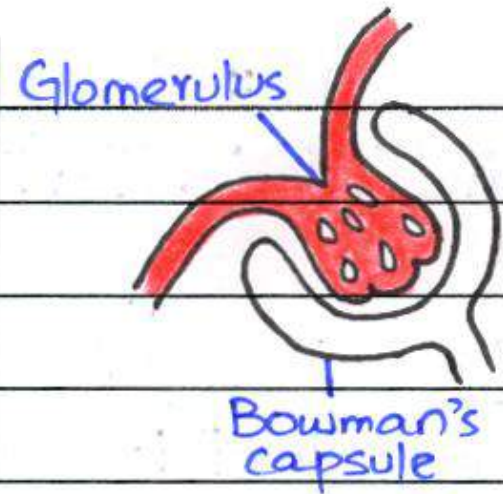
Cactus

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.

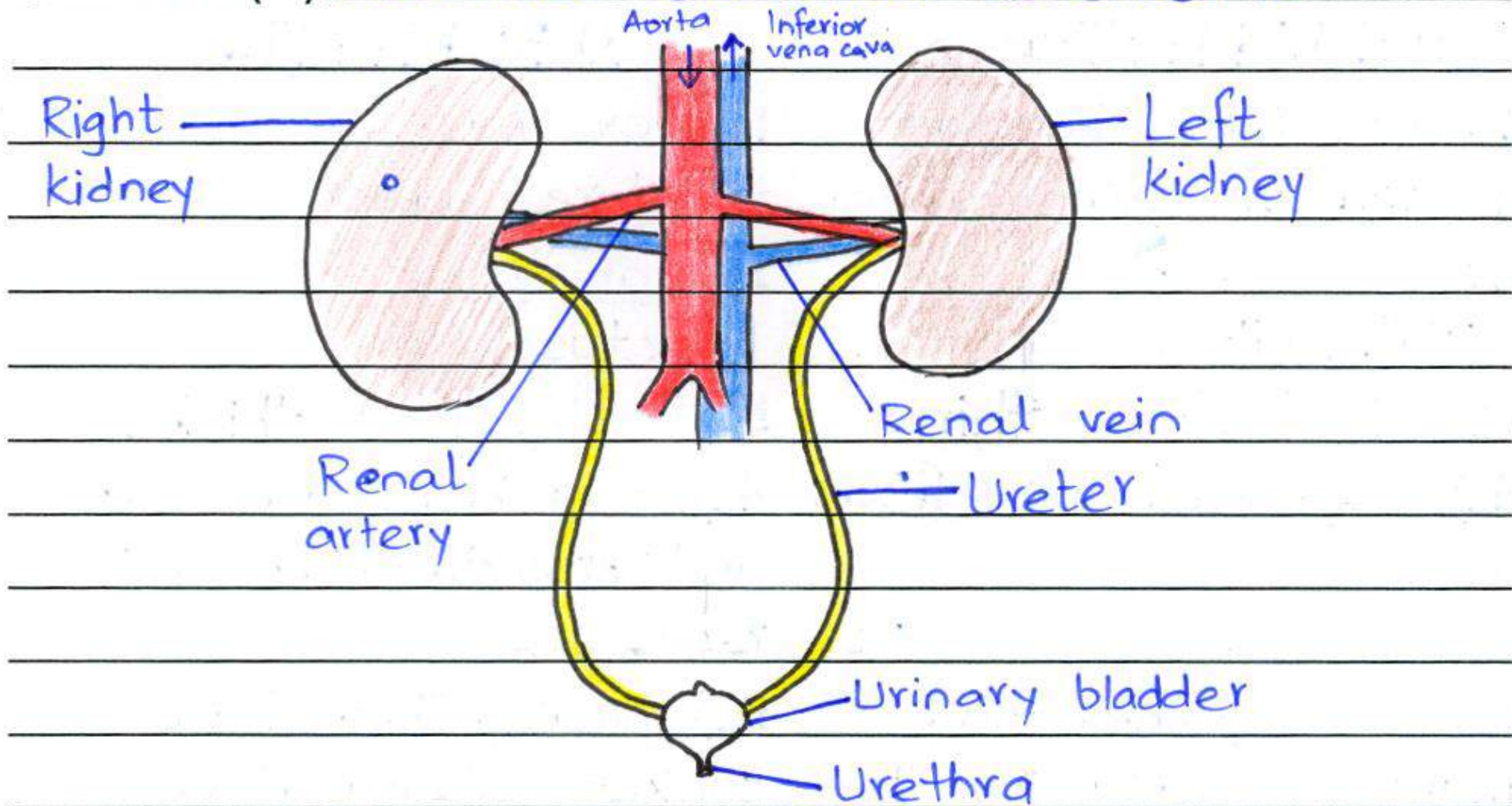
Function: As blood pressure is high in the glomerulus, urea, glucose, water, ions etc. enter the Bowman's capsule. It is pressure filtration.

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

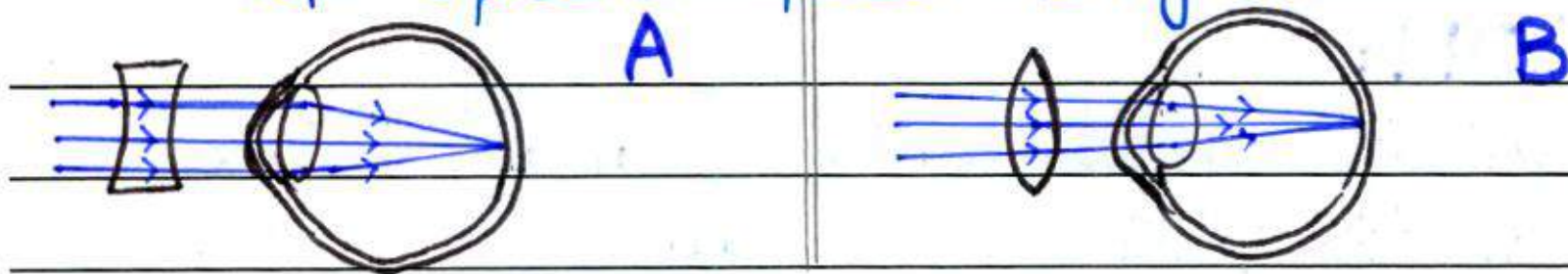
Q. No. 2 Part (ix) **DISORDERS OF EYE:**

a. **A:** Myopia (short-sightedness)

B: Hyperopia (long-sightedness/hypermétropia)

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.

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

P Generation (tall) TT x tt (short)

P Gametes



F₁ Generation

Tt (genotype)
All tall (phenotype)

F₁ x F₁

F₁ Genotype

Tt x Tt

F₁ Gametes

T t T t

F₂ Generation

		sperms	
		T	t
eggs	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

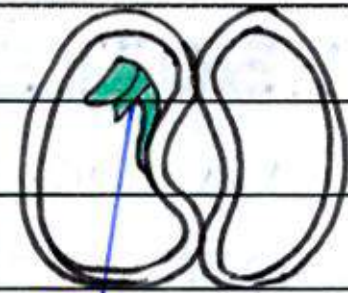
⇒ Start metabolism ⇒ Dissolve food

⇒ Swell and rupture seed coat.

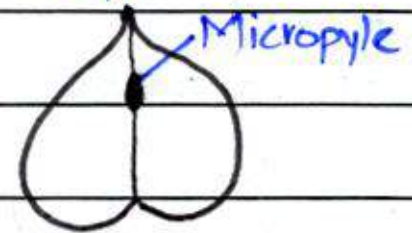
EMBRYO:

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.



Embryo



Micropyle

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:

⇒ Mutation ⇒ Sharing of resistance 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

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

Treatment:

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

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.

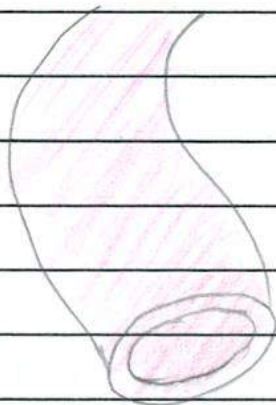
Treatment:

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 bronchiole



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

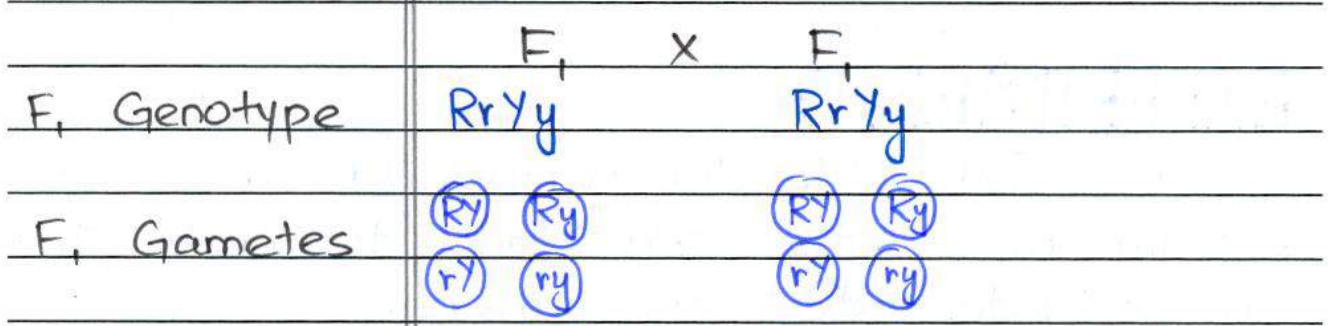
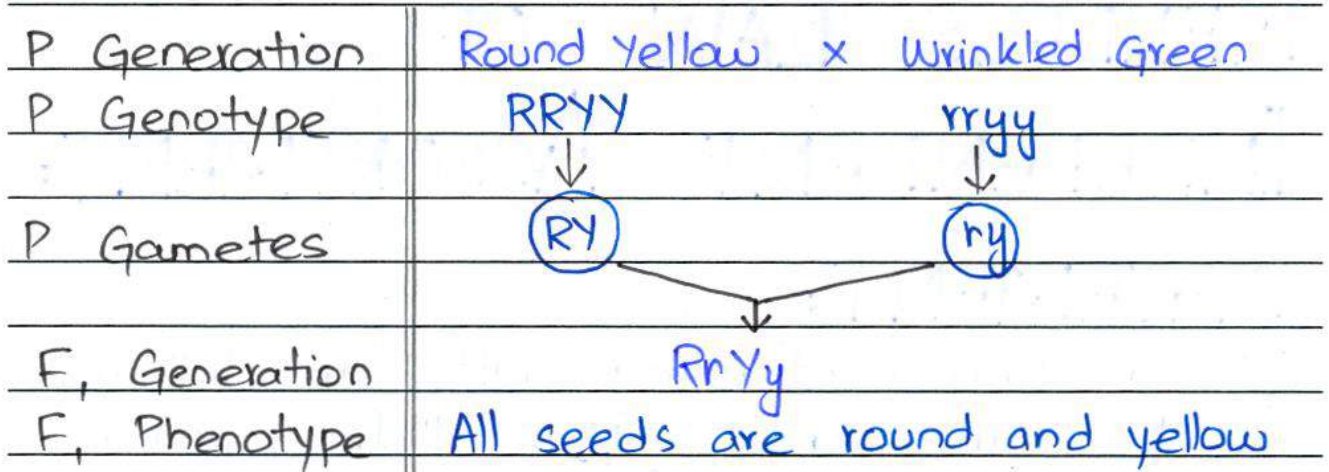
* Wrinkled and Green

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)



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

● Round green * Wrinkled green
 ● Round yellow * Wrinkled yellow

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

Q. No. Part ()

SCOPE OF TECHNOLOGY

FOOD AND AGRICULTURE

- Food and Agriculture
- Agriculture
- Food Security
- Sustainable Agriculture
- Food Safety
- Nutrition
- Food Processing
- Food Quality
- Food Preservation
- Food Packaging
- Food Distribution
- Food Retail
- Food Waste
- Food Policy
- Food Economics
- Food Law
- Food Education
- Food Research

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.

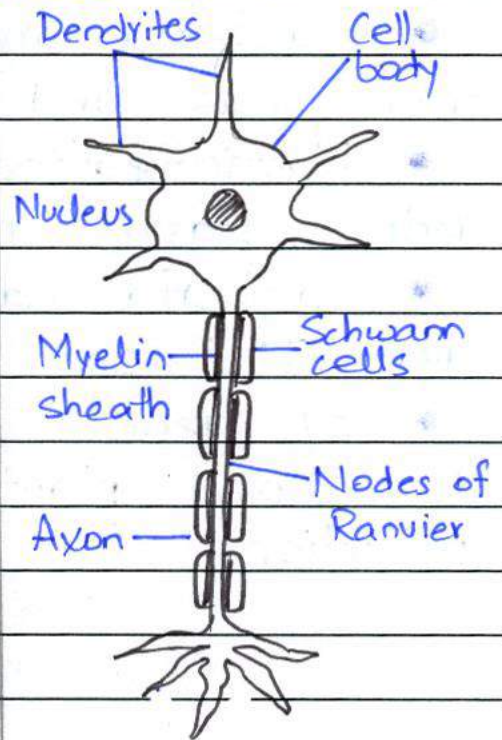
STRUCTURE OF NEURON:

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.



Neuron

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 transmits impulses from central nervous system to effector.

b. SENSORY NEURON:

Structure: It has one dendron and many axons.

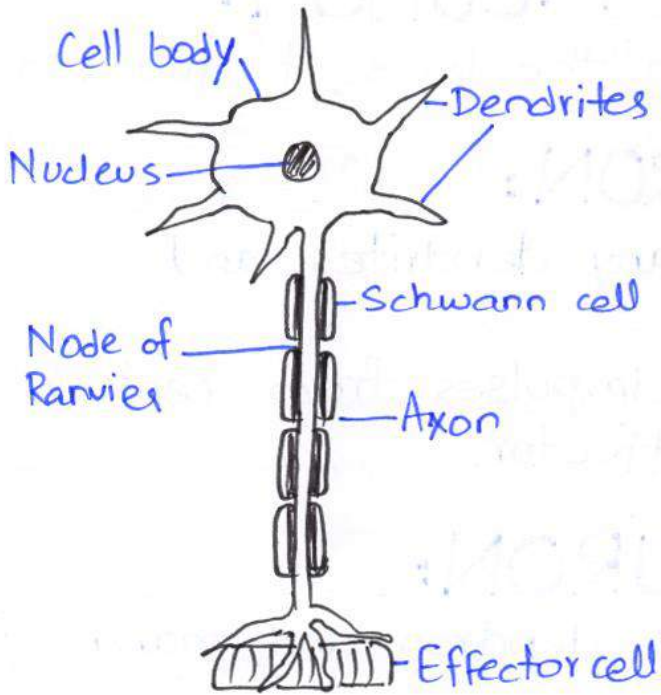
Function: It transmits impulses from receptor to central nervous system.

c. INTERNEURON:

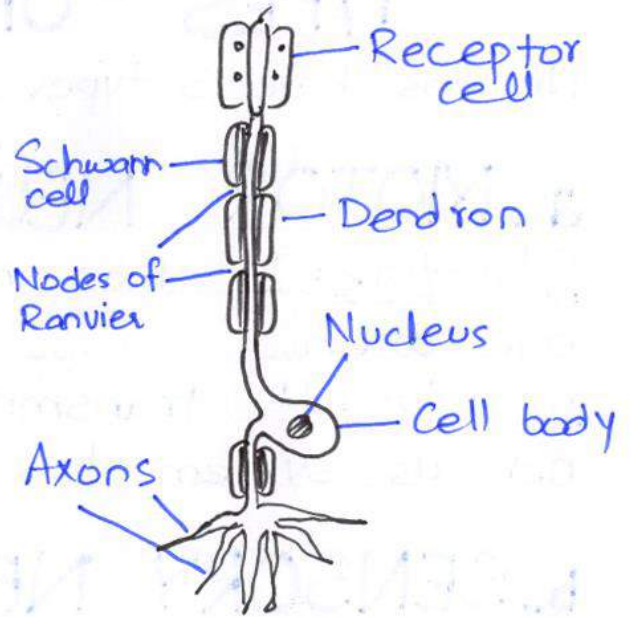
Structure: It has many dendrites and many axons.

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

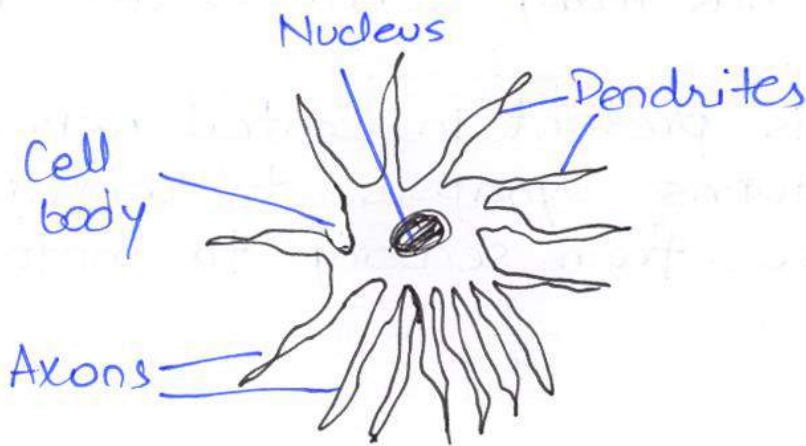
Q. No. 5 Part (2)



Motor Neuron

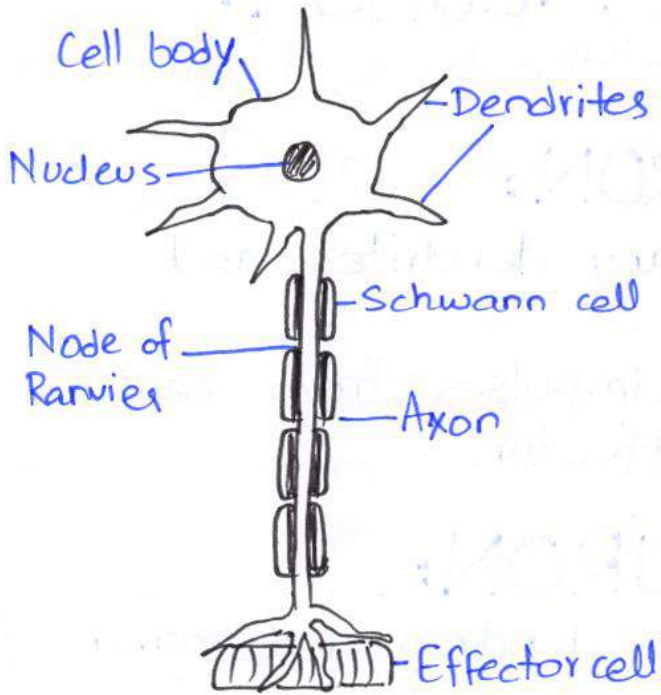


Sensory Neuron

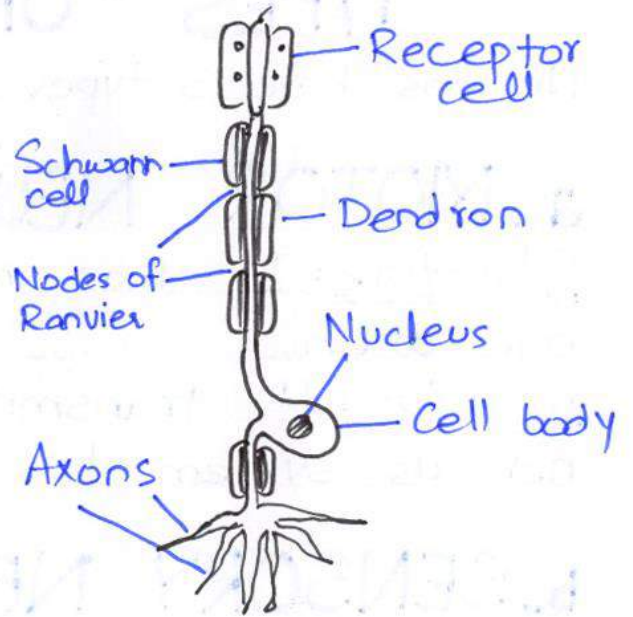


Interneuron

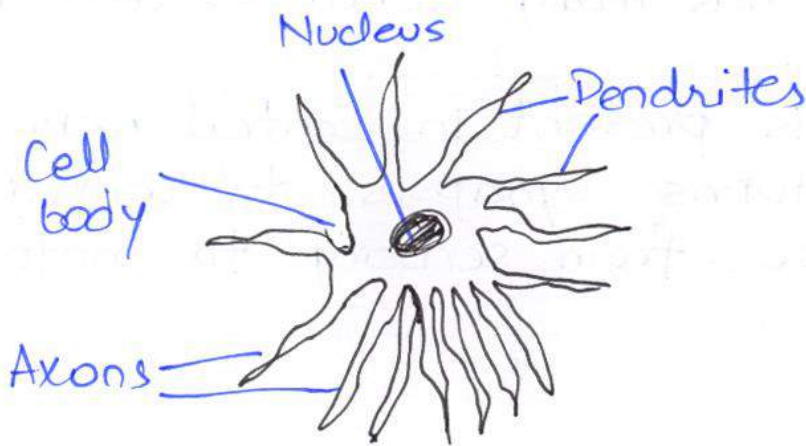
Q. No. 5 Part (2)



Motor Neuron



Sensory Neuron



Interneuron