BIOLOGY FULL SYLLABUS CLASS XI
MOCK PAPER – 2 (2025-26)

Time : 3 Hrs **M.M – 70 Marks**

Q1. Different cells have different sizes. Arrange the following cells in an ascending order of their size. Choose the correct option among the followings: **[1]**

(i) Mycoplasma (ii) Ostrich eggs (iii) Human RBC (iv) Bacteria

(A) (i), (iv), (iii) & (ii) (B) (i), (ii), (iii) & (iv)

(C) (ii), (i), (iii) & (iv) (D) (iii), (ii), (i) & (iv)

Q2. Given below are the types of cells present in some animals. Each one is specialised to perform a single specific function except: **[1]**

(A) Choanocytes (B) Interstitial cells (C) Gastrodermal cells (D) Nematocytes

Q3. Match column A with column B and choose the correct option: **[1]**

Column A		Column B
(a) Porifera	(i)	Canal system
(b) Aschelminthes	(ii)	Water-vascular system
(c) Annelida	(iii)	Muscular Pharynx
(d) Arthropoda	(iv)	Jointed appendages
(e) Echinodermata	(v)	Metameres

(A) a-ii, b-iii, c-v, d-iv, e-I (B) a-ii, b-v, c-iii, d-iv, e-i

(C) a-i, b-iii, c-v, d-iv, e-ii (D) a-i, b-v, c-iii, d-iv, e-ii

Q4. A plant shows thallus level of organisation. It shows rhizoids and is haploid. It needs water to complete its life cycle because the male gametes are motile. Identify the group to which it belongs to: **[1]**

(A) Pteridophytes (B) Gymnosperms (C) Monocots (D) Bryophytes

Q5. Rearrange the following zones as seen in the root in vertical section and choose the correct option.

(I) Root hair zone (II) Zone of meristems (III) Root cap zone (IV) Zone of maturation (V) Zone of elongation

(A) III, II, V, I, IV (B) I, II, III, IV, V (C) IV, V, I, III, II (D) V, IV, III, II, I **[1]**

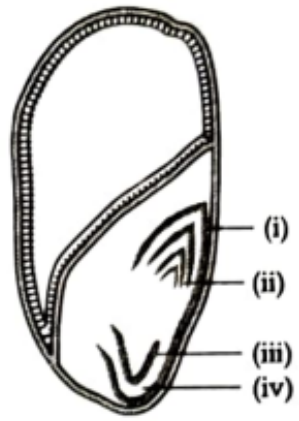
Q6. In frog, digestion of fats occurs mostly in:

(A) Rectum (B) Stomach (C) Duodenum (D) Small intestine **[1]**

Q7. Which of the following plants is used to extract the blue dye?

(A) *Trifolium* (B) *Indigofera* (C) *Lupin* (D) *Cassia* **[1]**

Q8. Identify the given labelled parts. **[1]**



(A) (i)- Coleoptile, (ii)- Coleorrhiza, (iii)- Plumule, (iv)- Radicle.
(B) (i)- Plumule, (ii)- Radicle, (iii)- Coleoptile, (iv)- Coleorrhiza.
(C) (i)- Coleoptile, (ii)- Plumule, (iii)- Radicle, (iv)- Coleorrhiza
(D) (i)- Radicle, (ii)- Coleorrhiza, (iii)- Coleorrhiza, (iv)- Plumule.

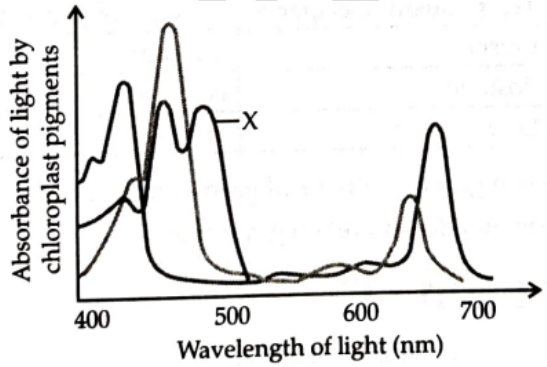
Q9. *Contagium vivum fluidum* was proposed by: **[1]**
(A) D.J. Ivanowsky (B) M.W. Beijerinck (C) Stanley (D) Robert Hooke

Q10. Identify the 'bath sponge' among the following **[1]**

(A) (i) (B) (ii) (C) (iii) (D) (iv)

Q11. A transverse section of the stem is stained first with safranin and then with fast green following the usual schedule of double staining for the preparation of a permanent slide. What would be the colour of the stained xylem and phloem?
(A) Red and green (B) Green and red (C) Orange and yellow (D) Purple and orange **[1]**

Q12. Name the pigment whose absorption spectrum is represented as 'X'.



(A) Chlorophyll A (B) Chlorophyll B (C) Carotenoids (D) Xanthophyll. **[1]**

Directions: In the following questions, A statement of Assertion is followed by a statement of Reason (R). Mark the correct choice as:

(a) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
(b) Both Assertion (A) and Reason (R) are true but Reason (R) is NOT the correct explanation of Assertion

(A).
(c) Assertion (A) is true but Reason (R) is false.
(d) Assertion (A) is false but Reason (R) is true.

Q13. **Assertion (A):** Systematics is the branch of biology that deals with identification, naming and classification of the organisms into groups.
Reason (R): The aim of classification is to group the organisms. **[1]**

Q14. **Assertion (A):** *Trichoderma, Colletotrichum* are called 'imperfect fungi'. **[1]**
Reason (R): Sexual reproduction is absent in these forms.

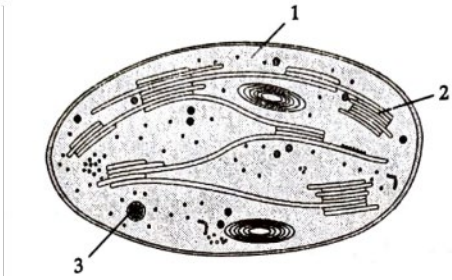
Q15. **Assertion (A):** The gymnosperms are heterosporous. **[1]**
Reason (R): They produce diploid microspores within sporangia

Q16. **Assertion (A):** Fish belonging to class osteichthyes have to swim constantly. **[1]**
Reason (R): Air bladder is present in these fishes.

SECTION – B

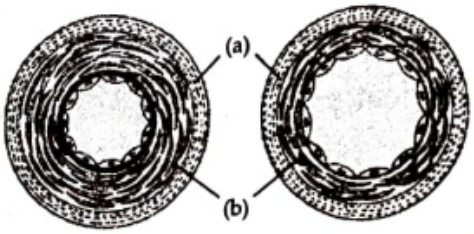
Q17. What are the factors which set the limit of cell size? **[2]**

Q18. Examine the figure. **[2]**



(a) Name the labelled part (1) and (2).
(b) Name the metabolic processes taking place in the places marked (1) and (3).

Q19. **(a)** Identify the given diagram (A), (B). **[2]**
(b) Name the given labeled parts (a), (b).
(c) Write the functions of label a, b.



Q20. **(a)** Label any five features in a given diagram. **[2]**

(b) Name the hair like outgrowths which attach to the surface of other bacterial cells.

Q21. **Histones** are highly basic protein, abundant in lysine and arginine. **[2]**
They act as spools around which winds to form structural units called nucleosomes.
(a) Where does the histone protein found in cell?
(b) Mention the function of histone protein in eukaryotic cell.

OR

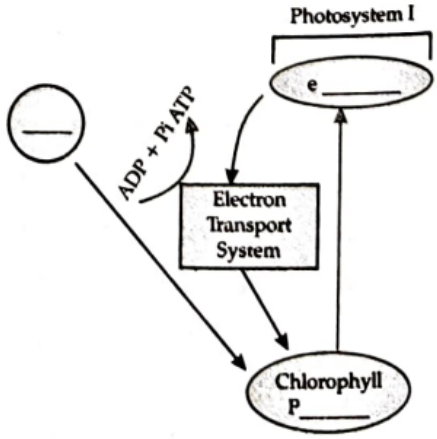
The table given below shows some characteristics feature of gram-negative and gram-positive bacteria. Based on the given information answer the following questions.

Characteristics	Gram positive bacteria	Gram negative bacteria
Cell Wall	Present	Present
Gram Stain	Positive	Negative
Lipid Content	Low	High

(a) What is the difference between gram-positive and gram-negative bacterial cell walls?
(b) Why does gram-negative bacteria doesn't retain gram stain?

SECTION - C

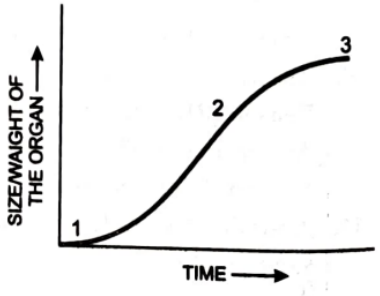
Q22. **(a)** Complete the flow chart given with proper labeling. **[3]**
(b) Name the process shown above and where does it occur.



Q23. What is hepatic portal system? **[3]**

Q24. The transverse section of a plant material shows the following features: **[3]**
Vascular bundles are conjoint, closed and scattered and are surrounded by the sclerenchymatous bundles sheath
(a) What will you identify it as?
(b) Write any other four features of this specimen.

Q25. **(a)** In the figure of the sigmoid growth curve given below, label segments 1,2 and 3. **[3]**
(b) Define 1,2 and 3.



Q26. What is meant by tertiary structure of protein? Why a tertiary structure is essential for a protein? **[3]**

Q27. **(a)** Name the source gland of luteinising hormone (LH). **[3]**
(b) Mention the other hormone along with which it acts on its target cells/organ.

(c) Give their two functions.

OR

(a) What hormones are secreted by the posterior pituitary gland?

(i) What function does each serve?

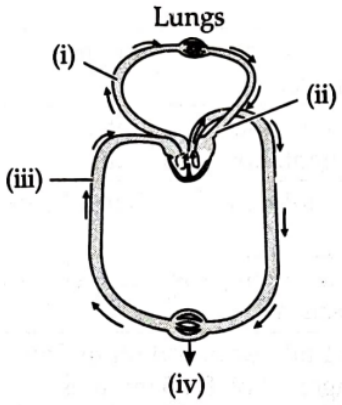
(ii) Where are these hormones actually produced?

(b) How are these hormones transported to the region from which they are released?

SECTION - D

Q28. What are the conditions required for growth? **[4]**

Q29.



(a) What does the above diagram show. **[4]**

OR

Name the two pathways involved in the above process.

(b) In relation with the given diagram answer the following questions:

(i) Label the given diagram.

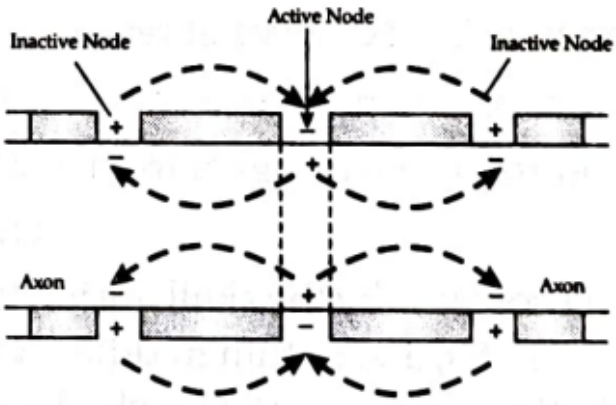
(ii) Name the vein which carries the oxygenated blood.

(c) What is the significance of above given process.

Q30. **(a)** What does the above diagram show? **[4]**

(b) Name the type of conduction.

(c) What is the nature of nerve impulses?



OR

Haemoglobin is a red coloured iron containing pigment present in the RBCs where O_2 can bind with haemoglobin. Similarly CO_2 is carried by haemoglobin. The oxygen dissociation curve is highly useful in studying the effect of factors like pCO_2, H^+ concentration, etc., on the binding of O_2 with haemoglobin.

(a) Which pigment is formed when O_2 binds with haemoglobin?

(b) Which pigment is formed when CO_2 binds with haemoglobin?

(c) Name the factors favourable for the formation HbO_2.

SECTION - E

Q31. All living organisms are made up of cell. Cell is the structural and functional unit of all organisms. The main structural and functional attributes of a cell are as follows: **[5]**

Cell organelle	Structure
Cell membrane (Found in all cells)	Composed of lipid and protein selectively permeable
Cell Wall (Found in plant cells, bacteria and Fungi, etc.)	Composed of cellulose and hemi-cellulose in plants. Rigid and strong. Composed of peptidoglycan in bacteria. Composed of chitin in fungi.
Mitochondria (Powerhouse of the cell)	Organelles with membrane folds called cristae. Semi-autonomous organelles
Lysosome (Digestive bag of the cell)	Tiny sac like structure surrounded by single, thin membrane.
Golgi apparatus	Consists of cisternae stacked together in parallel rows.

(a) What is the importance of chitin in fungi?
(b) What is the role of peptidoglycan in bacteria?
(c) What is the function of lysosome?
(d) Which cell organelle is known as the packaging and dispatching unit of the cell?

OR

Based on the procedure and result, name the following tests which fall under the given categories.

Item	Name of the test	Procedure	Result
(a) Fruit Juice	(i)	Fruit juice + Biuret's reagent	Color change from light blue to purple
	(ii)	To a brown paper, add few drops of juice.	No translucent spot
	(iii)	To 1 ml juice, add ninhydrin reagent. Boil for 5 minutes	Colourless solution changes to pink, blue, or purple colour
(b) Saliva	(i)	To 1 ml saliva, add biuret's reagent.	Color change from light blue to purple
	(ii)	To a brown paper, add few drops of saliva	No translucent spot
	(iii)	To 1 ml saliva, add ninhydrin reagent. Boil for 5 minutes	Colourless solution changes to pink, blue, or purple colour
(c) Sweat	(i)	To 1 ml sweat, add biuret's reagent	No colour change
	(ii)	To 1 ml sweat, add water	Oily appearance
	(iii)	To 1 ml sweat, add ninhydrin reagent. Boil for 5 minutes	No colour change

Q32. A neuron is a microscopic structure composed of three major part namely cell body, dendrites, and axon. The cell body contains cytoplasm with typical cell organelles and certain granular bodies called

Nissl's granules. **[5]**

(a) Which cells envelop myelinated nerve fibres?

(b) Which type of neurons are found in eyes?

(c) Which part of the neuron receives signal from another neuron?

OR

The Human brain is well protected by the skull. Inside the skull, the brain is covered by cranial meninges consisting an outer layer called dura mater, a very thin middle layer called arachnoid and an inner layer called Pia mater. The brain can be divided into three major parts: Forebrain, midbrain and hindbrain.

(a) What are the three major regions which makes up the brain stem?

(b) Name the tract of nerve fibres which connects the two hemispheres of the brain.

(c) What is the role of hypothalamus?

Q33. Distinguish between: **[5]**

(a) Bony fishes and cartilaginous fishes.

(b) Exoskeleton and endoskeleton.

OR

Algae are known to reproduce asexually by variety of spores under different environmental conditions.

(a) Name the different types of spores.

(b) Write down the conditions which are required for the production of these spores.

(c) Give examples for each type of spores.

BIOLOGY FULL SYLLABUS CLASS XI

MOCK PAPER – 2 (2025-26)

SOLUTION

Q1. **(A)**

Explanation: Mycoplasma or PPLO (Pleuro Pneumonia Like Organism) is smallest prokaryotic cell and ostrich egg is the largest ever known cell.

Q2. **(B)**

Explanation: Out of all these cells interstitial cells can arise any kind of cells in animal body. other cells have their individual functions..

Q3. **(C)**

Q4. **(D)**

Explanation: Division Bryophyte have thalloid body haploid rhizoids (root like structure) and need water for the sexual reproduction.

Q5. **(A)**

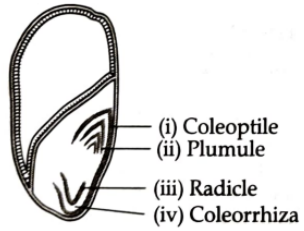
Q6. **(D)**

Explanation: In frogs most of the digestion occurs in small intestine, which is divisible into duodenum and ileum.

Q7. **(B)**

Explanation: Indigo (blue) dye is extracted from the leaves of *Indigofera tinctoria* these leaves have a colourless chemical which turns to bluish color after exposure to air.

Q8. **(C)**



Q9. **(B)**

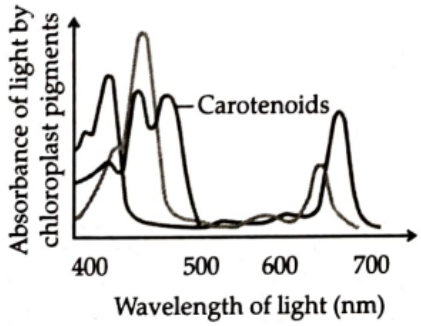
Q10. **(B)**

Explanation: Bath sponge is the common name for *Euspongia* which belongs to phylum porifera and it is commercially used sponge.

Q11. **(A)**

Explanation: Xylem gives the red colour with safranina as its walls are lignified and picks up the red dye and appears pinkish in colour while fast green colour to cellulose.

Q12. **(C)**



Q13. **(B)**

Explanation: Systematics is the branch of biology that deals with the identification, naming and classification of the organisms into groups. The aim of classification is to group the organisms.

Q14. **(A)**

Explanation: *Trichoderma, Colletotrichum* are called imperfect because sexual reproduction is absent in these forms.

Q15. **(C)**

Explanation: Gymnosperms produce haploid microspore within microsporangia.

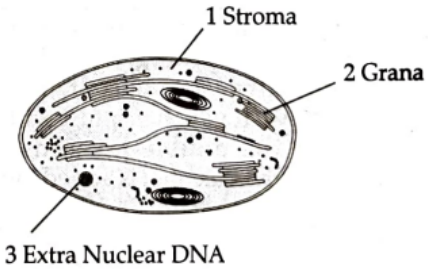
Q16. **(D)**

Explanation: Fishes belonging to class Chondrichthyes have to swim constantly. It is because air bladder is absent in these fishes therefore, they have to swim constantly to avoid sinking.

Q17. The factors which set the limit of cell size or volume are:

(i) Nucleo-cytoplasmic ratio which determines the range of control of metabolic activities by nucleus

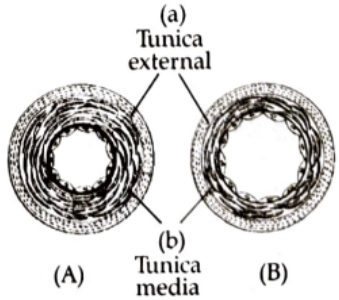
Q18.



(a) 1- Stroma , 2- Grana.

(b) Label 1 represents the stroma of chloroplast, where the dark reaction of photosynthesis takes place. Label 3 represents extranuclear DNA. This DNA is responsible for replication of chloroplast.

Q19. (a)



(A) Artery

(B) Vein.

(b)

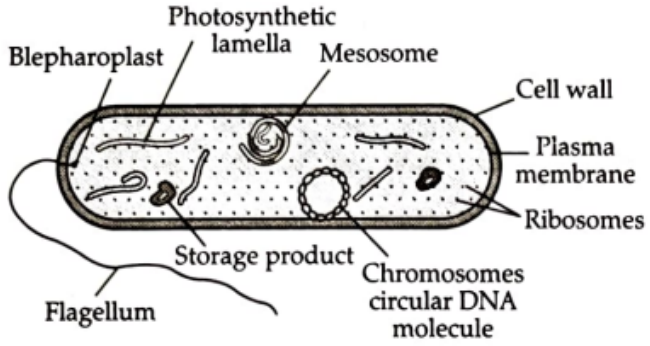
(a)- Tunica Externa

(b)- Tunica Media.

(c) **Tunica externa:** It is the outermost coat which is formed of connective tissues. Tunica externa is also called tunica adventitia.

(d) **Tunica media:** It is a middle coat which is chiefly formed of elastic connective tissue and smooth muscle fibres. It is thicker in the artery.

Q20. (a)



(b) Pili.

Q21. (a) Histone protein is found in the nucleoplasm.

(b) Histone binds with negatively charged DNA forming octamers called nucleosome.

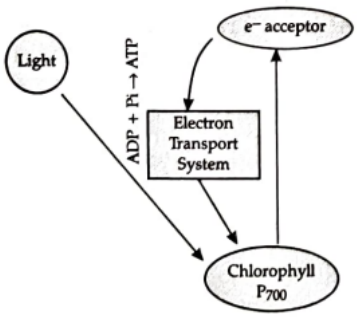
OR

(a)

Gram-Positive Bacterial Cell wall	**Gram-Negative Bacterial Cell wall**
• The cell wall layer of gram-positive bacteria cell is single-layered thick.	• The cell wall layer of gram-negative bacteria cell is double layered thick.
• It retains the purple color of crystal violet dye when stained.	• It does not retain the purple color of crystal violet dye when stained.
• It contains thick layers of peptidoglycan which helps to retain the color of crystal violet dye.	• It contains thin layers of peptidoglycan.

(b) The gram stain is retained due to the presence of layers of peptidoglycan. The cell wall of gram-negative bacteria contains thin layers of peptidoglycan which is intact with lipoproteins between the double-layered cell wall and dissolves when alcohol is added, hence it doesn't retain the Gram stain.

Q22. (a)



(b) The above shown flow chart is Cyclic Photophosphorylation of Photosystem II.
This process occurs in the thylakoid membrane of chloroplast.

Q23. **Hepatic portal system:**

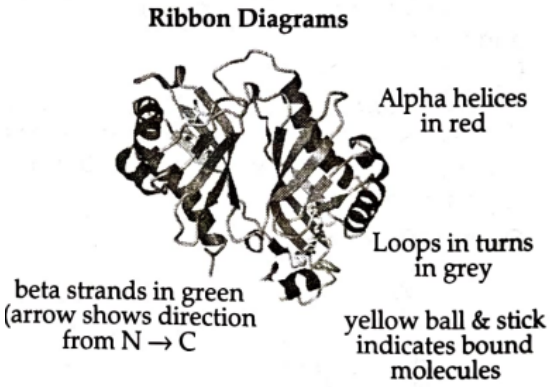
(i) It carries blood from the alimentary canal and its associated glands to the liver.

(ii) It consists of a large hepatic portal vein that receives a number of tributaries.
(iii) The tributaries are namely oesophageal, gastric, duodena-pancreatic, intestinal, splenic and rectal.

Q24. **(a)** It is a monocot stem. It is characterised by conjoint, collateral, and closed vascular bundles, scattered in the ground tissue containing the parenchyma. Each vascular bundles is surrounded by sclerenchymatous bundle-sheath cells.
(b) Other four features of monocot stem are :
(i) Vascular bundles are scattered in the ground tissue.
(ii) Y-shaped xylem endarch condition.
(iii) Cambium is absent.
(iv) Phloem parenchyma and medullary rays are absent in monocot stems.

Q25. **(a)**
1-Lag phase.
2-Exponential phase
3-Stationary phase
(b) In the given graph,
1- The lag phase is the initial growth phase, which is slow.
2- Log or exponential phase, growth increases rapidly and with a limited supply of nutrients,
3- Stationary phase.-The growth slows down again.

Q26. The complex three dimensional shape formed by the coiling and folding of helical polypeptide chain is known as a tertiary structure of proteins. Such structure are held together by weak bonds formed between various parts of polypeptide chain. The biological activity of a protein molecule depends largely upon the specific tertiary structure.



Q27. **(a)** LH is secreted by adenohypophysis or anterior pituitary gland
(b) FSH is the other hormone (gonadotropin) along with which its target cell.
Functions of LH:
(i) In males, it stimulates spermatogenesis.
(ii) In females, it stimulates ovulation and the formation of the corpus luteum.
c) Functions of FSH:
1. In females, it stimulates the growth of ovarian follicles.
2. It helps in the regulation of menstrual cycle.

OR

(a) Oxytocin and vasopressin.

(i) Oxytocin: It is released into the blood when hypothalamic neurons are stimulated by the widening of the uterus at the time of delivery or the sucking of breasts by an infant. It induces contraction of smooth muscles of the uterus during the birth of a young one and myoepithelial cells of mammary glands to

infant. Therefore, it is also known as 'birth hormones' and or 'milk-ejecting hormones'.
Vasopressin: It is also called antidiuretic hormone (ADH). It decreases the loss of water in urine by increasing reabsorption of water in distal convoluted tubules, collecting tubules and collecting ducts of kidneys. It is transported as neurophysin-proteins bound secretory granules down the nerve fibre.
(ii) Oxytocin and vasopressin are produced in Hypothalamus and released through posterior pituitary.
(b) Neurosecretory cells of hypothalamus release the oxytocin and vasopressin to the posterior pituitary lobe of pituitary gland. These hormones are stored and released into the blood from posterior posterior pituitary to the region.

Q28. Growth is influenced by a number conditions which are as follows:
(i) Water is required for cell elongation, maintenance of turgidity of growing cells and providing a medium for enzyme action.
(ii) Oxygen is essential for aerobic respiration and hence the availability of energy for biosynthetic activity.
(iii) Nutrients are raw materials for the synthesis of protoplasm, as well as the source of energy.
(iv) Light is required for tissue differentiation, synthesis of photosynthetic pigments and photosynthesis.
(v) The optimum temperature for proper growth is 28–30°C.
(vi) Environmental signals such as light & gravity also affect certain stages of growth.

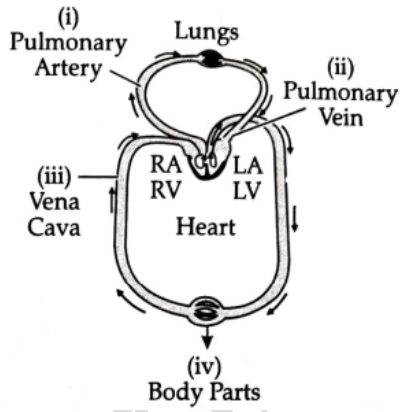
Q29. **(a)** The given diagram shows the process of - double circulation in human.

OR

The two pathways involved in double circulation are

1. Pulmonary circulation and 2. Systemic circulation.

(b) (i)



(ii) Pulmonary artery.

(c) The deoxygenated and oxygenated blood remain separated and do not mix.

Q30. (a) The above diagram shows the conduction of impulses along the myelinated nerve fiber.
(b) Along a myelinated nerve fiber, the conduction of impulse is called saltatory conduction.
(c) The nature of the nerve impulses is electrochemical.

OR

(i) Oxyhaemoglobin
(ii) Carbamino-haemoglobin
(iii) High pO_2, low pCO_2, lesser H^+ concentration and lower temperature.

Q31. (i) Chitin is a structural polysaccharide. It is present in cell walls of fungi and provides important structural stability.
(ii) It prevents bacteria from lysis due to turgor pressure. it also helps maintain cell shape and protects the cell from extreme environmental conditions.
(iii) Lysosome is a tiny sac-like structure surrounded by a single, thin membrane that contains digestive

enzyme that helps in intracellular digestion.

(iv) Golgi apparatus.

OR

Item	Name of the test	Procedure	Result
Fruit Juice	Test for protein	Fruit juice + Biuret's reagent	Color change from light blue to purple
	Test for fats	To a brown paper, add few drops of juice	No translucent spot
	Test for amino acids	To 1 ml juice, add ninhydrin reagent. Boil for 5 minutes	Colourless solution changes to pink, blue or purple colour
Saliva	Test for protein	To 1 ml saliva, add biuret's reagent	Colour change from light blue to purple
	Test for fats	To a brown paper, add few drops of saliva	No translucent spot
	Test for amino acids	To 1 ml saliva, add ninhydrin reagent. Boil for 5 minutes	Colourless solution change to pink, blue or purple colour
Sweat	Test for protein	To 1 ml sweat, add Biuret's reagent	No colour change
	Test for fats	To 1 ml sweat, add water	Oily appearance
	Test for amino acids	To 1 ml sweat, add ninhydrin reagent. Boil for 5 minutes	No colour change

Q32. **(a)** Schwann cells envelop myelinated nerve fibres.

(b) Bipolar neurons have one axon and one dendrite found in retina of eye.

(c) Dendritic ends of neuron receives signal from another neuron.

OR

(a) Mid brain, Pons, and medulla oblongata are three major regions make up brain stem. .

(b) Corpus callosum.

(c) Hypothalamus controls body temperature, urge for eating and drinking

Q33. (i) Differences between bony fishes and cartilaginous fishes:

S. No.	Bony fishes	Cartilaginous fishes
(i)	They are called osteichthyes.	They are called chondrichthyes.
(ii)	Their endoskeleton is bony.	Their endoskeleton is cartilaginous.
(iii)	There are about 25,000 species known.	There are about 600 species known.
(iv)	They are found both in sea and fresh water.	All are marine forms.
(v)	They have swim bladder.	Swim bladder absent
(vi)	Gills are covered by opercula.	They have five pairs of gills. Operculum absent.
(vii)	e.g., Salmon, Catla, Rohu, Bombay duck.	e.g., Skates and Rays, Scolidon, Electric ray.

(ii) Differences between exoskeleton and endoskeleton:

S. No.	Exoskeleton	Endoskeleton
(i)	It is hard protective covering present over the body of many animals.	It is formed within the body of vertebrates.
(ii)	It is formed by the deposition of hard protective material on the surface of body. Invertebrate's scales, nails, claws and feathers are exoskeleton.	It is formed of hard bone and cartilage.
(iii)	It helps in protection, has covering functions, and helps in quick movement.	It forms frame work of the body. It provides shape and posture to the body. It protects delicate organs of the body and helps in movement.

OR

(a) Zoospores, aplanospores, hypnospores, statospores and neutral spores.

(b)

(i) Zoospores: They are motile flagellated spores. Zoospore formation takes place during favourable conditions. During their formation, flagella are withdrawn and organisms come to rest. The protoplasm undergoes repeated divisions and forms 8–16 daughter protoplasts. These daughter individuals called zoospore develop their individual cell wall and flagella. The parent cell wall is lost and new individuals attain independent existence.

(ii) Aplanospores: These are non-motile asexual spores. They are asexually formed within a cell by the contraction of protoplasm and the formation of new cellulose walls around it. They develop into aplanospores which may either germinate directly or may divide to produce zoospores.

(iii) Hypnospores: These are resting spores. In these, the protoplasm withdraws from the cell wall, rounds up and develop a thick wall under unfavourable condition. During favourable condition, they germinate to form new plants.

(iv) Stratospores: These are thick-walled spores produced in diatoms.

(v) Neutral spores: In some algae, the protoplast of vegetative cells directly function as spores called as neutral spores.

(c)
Zoospores – e.g., *Chlamydomonas*.
Aplanospores – e.g., *Spirogyra*.
Hypnospores – e.g., *Vaucheria*.
Stratospores – e.g., Diatoms.
Neutral spores – e.g., *Ectocarpus*.