

Roll No. _____

Code : 11-201718BO-A

Please check that this question paper contains **26** questions and **8** printed pages.

CLASS–XI
SUBJECT–BIOLOGY (THEORY)

Time allowed : 3 Hrs.

M.Marks : 70

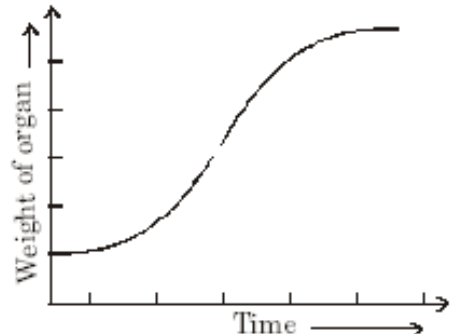
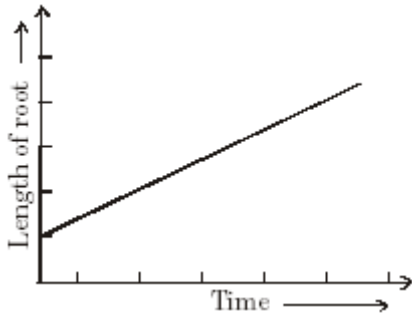
General Instructions :

- (i) There are total 26 questions in five sections in the question paper.*
- (ii) All questions are compulsory.*
- (iii) Section A contains question numbers 1 to 5 of 1 mark each.*
- (iv) Section B contains question numbers 6 to 10 of 2 marks each.*
- (v) Section C contains question numbers 11 to 22 of 3 marks each.*
- (vi) Section D contains question number 23 (Value Based) of 4 marks.*
- (vii) Section E contains question numbers 24 to 26 of 5 marks each.*
- (viii) There is no overall choice in the question paper. However an internal choice is provided in one question of two marks, one question of three marks and all three questions of five marks.*
- (ix) Fifteen minutes reading time has been allotted to read the question paper. Students will not write anything during this period.*
- (x) Draw neat and well-labelled diagrams wherever necessary.*

Section-A

1. Name the two components of Lichens.
2. All vertebrates are chordates but all chordates are not vertebrates. Comment.

3. How are the roots of *Rhizophora*, growing in swampy areas, modified to obtain oxygen for respiration ?
4. Calling the biosynthetic phase of photosynthesis as Dark reaction is a misnomer. Do you agree with the statement ? Why or why not ?
5. Given below are the two graphs depicting root elongation with time and weight of an organ with time respectively :



Looking at the graph, comment on the type of growth depicted in the two graphs.

Section-B

6. Agar is a commercial product which has wide applications. Give two sources and two uses of Agar.
7. Apart from genomic DNA there is another smaller DNA found in many bacterial cells. Describe its structure and role in a bacterial cell.
8. Explain the sensitive mosaic vision of a cockroach.

OR

- (a) Differentiate between endarch and exarch type of primary xylem.
- (b) Give examples of two plants whose phloem fibres are used commercially.

9. Give well-labelled diagrammatic representation of cell cycle indicating formation of two daughter cells from one cell.
10. Answer the following questions using your knowledge of Plant Growth Regulators (PGRs)
- (a) How can we increase the yield of sugarcane by 20 tonnes per acre?
 - (b) How can we hasten fruit ripening in apples ?

Section-C

11. Give one example of each of the following :
- (a) An egg-laying mammal
 - (b) A fish having poisonous sting
 - (c) A walnut-shaped marine organism that shows bioluminescence
 - (d) A cnidarian showing metagenesis
 - (e) An arthropod which is a gregarious pest
 - (f) A reptile having four-chambered heart
12. Both bone and cartilage, are specialised connective tissues found in our body. Answer the following :
- (a) Give one similarity and one difference between them.
 - (b) Name the fluid connective tissue of our body and write any one of its functions.
13. (a) Looking at the leaf of a plant, can we decide whether the plant is a Monocot or a Dicot ? If so how ?
- (b) Looking at a transverse section of a log of wood can we depict the age of a tree ? If so how ?

14. Draw the floral diagram and also write the floral formula of Pea plant.
(*Pisum sativum*)
15. Watson and Crick gave the secondary structure of a Nucleic Acid which functions as genetic material in living organisms.
- (a) Name the nucleic acid.
 - (b) Draw its secondary structure.
 - (c) Label the phosphodiester bond in the structure.
16. Give reasons :
- (a) Both starch and cellulose are polysaccharides but iodine gives colour test with starch and not with cellulose.
 - (b) Proteins are called heteropolymers.
 - (c) Presence of malonate inhibits the activity of succinate dehydrogenase enzyme.
17. (a) Compare the Apoplast with Symplast pathways of water movement in plants. (Any two points)
- (b) Explain the role of Casparian strips found in plant roots in the above two methods of water transport.
18. Deficiency of a single element can cause multiple symptoms and the same symptom may be caused by deficiency of one of the several elements. Explain the above statement by giving examples of above two conditions.
19. There is a net gain of 36 ATP molecules during aerobic respiration of one molecule of glucose. Elaborate the above statement and show the above calculation in Respiratory Balance Sheet.

20. Rearrange the following in a correct order :

- (a) Synaptic knob, dendrites, cell body, axon (movement of electrical impulse)
- (b) Oval window, ear drum, Cochlea fluid, ear ossicles, basilar membrane (movement of sound wave during mechanism of hearing)
- (c) Potential difference in photo-receptors, change in structure of opsin, action potential in ganglion cells, transmission by optic nerve (Path of light rays during mechanism of vision)

OR

Study the following diagram :

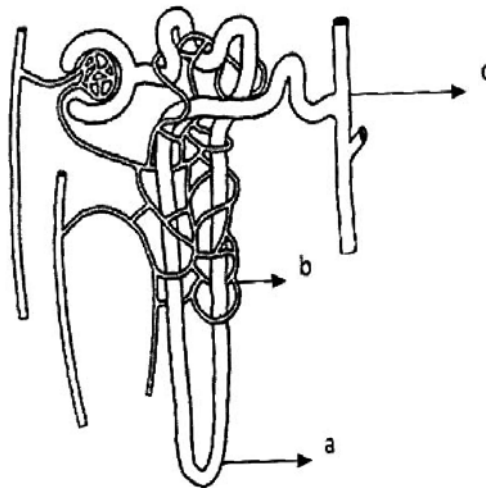


Fig. Nephron

- (a) Label the parts a, b and c in the above diagram of a nephron.
- (b) Name the cells forming the inner lining of Bowman's capsule.
- (c) What is the value of Glomerular filtration rate of a healthy person?

21. A woman often gets wild contractions in her leg muscles.
- Name the disorder she is suffering from.
 - Deficiency of which element in our body fluid causes the above disorder ?
 - Explain the role of above element in muscle contraction.
22. The graph given here shows oxygen dissociation curve during the transport of oxygen by haemoglobin in our body.

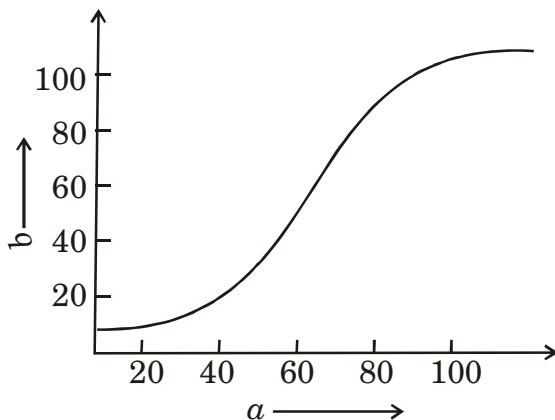


Fig. Oxygen dissociation curve

- Name the parameters 'a' and 'b' plotted on X and Y axis respectively.
- Haemoglobin binds and dissociates with oxygen in our body at two different sites. Explain these processes.

Section-D (Value Based)

23. Raveena was diagnosed with stone in her gall bladder and her doctor advised her to get her gall bladder removed through laproscopic surgery. She was worried that if she undergoes the above surgery, she will not be able to eat anything and her food will not get digested. Her niece Sarika, who is a biology student of class XI, counselled her aunt and explained her the function of gall bladder in the body.

Understanding the above situation, answer the following questions :

- (a) Write any two values shown by Sarika.
- (b) What is the function of gall bladder in our body ?
- (c) What type of diet would you suggest to a person whose gall bladder is removed ?
- (d) Write any two food stuffs which you would suggest her to generally avoid.

Section-E

24. (a) Give three points of difference between Anaphase I and Anaphase II of meiosis.
- (b) Where does meiosis occur in the human body ?
- (c) What is the significance of meiosis in living organisms ?

OR

Explain the different stages of mitosis with the help of diagrams. Give any two significance of this process.

25. Study the graph given below :

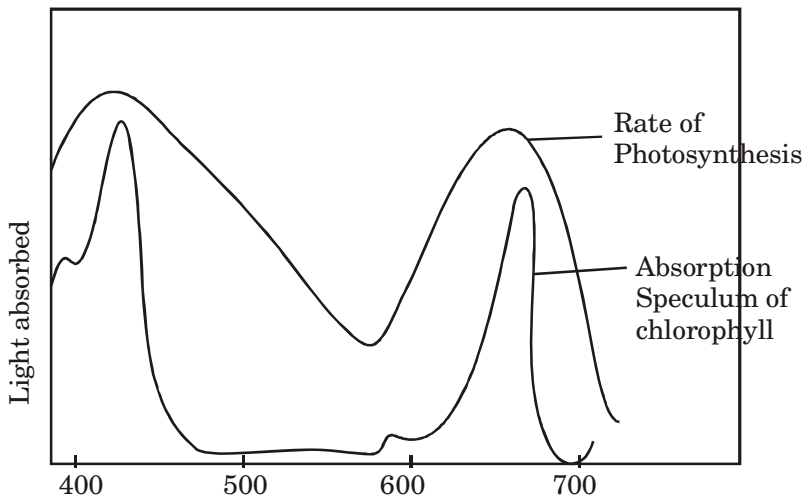


Fig. Wavelength of light in nanometre (nm)

Depict from the above graph—

- (a) At which wavelength (colour of spectrum) most photosynthesis takes place.
- (b) What can you interpret from overlapping of the two peaks in rate of photosynthesis with the two peaks in absorption spectrum of chlorophyll a.
- (c) Productivity and yield of C_4 plants is better than C_3 plants. Comment.

OR

Answer the following statements :

- (a) Draw stepwise the process of cyclic photophosphorylation.
 - (b) Write the possible site of this process giving reason.
 - (c) Under what conditions cyclic photophosphorylation occurs in grana?
 - (d) Name one internal and one external factors affecting photosynthesis.
26. The urine sample of a person showed high content of glucose and ketone bodies. Use this information to answer the following :
- (a) Name the possible disease he is suffering from.
 - (b) Which endocrine gland and hormone is involved in the above disease?
 - (c) Explain the role of above gland in our body, mentioning the role of all the hormones secreted by it.
 - (d) How can the disease in (a) be treated ?

OR

Some people in hilly areas are often observed to have swollen necks.

- (a) Name the disease they are suffering from.
- (b) Which hormones are involved in the above disease ?
- (c) Which element is essential in our diet for appropriate secretion of above hormones ?
- (d) What can be the consequences of improper secretion of above hormones during pregnancy ?
- (e) Name one more hormone secreted from the above gland which regulates calcium level in blood. Also name the gland.

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