



ANNUAL EXAMINATION 2023-24

SUBJECT: BIOLOGY

CLASS: XI

Time: 3Hr

SAMPLE PAPER

M.M: 70

General Instructions:

1. All questions are compulsory.
2. The question paper has five sections and 33 questions. All questions are compulsory.
3. Section – A has 16 questions of 1 mark each; Section – B has 5 questions of 2 marks each; Section – C has 7 questions of 3 marks each; Section- D has 2 case – based questions of 4 marks each; and Section – E has 3 questions of 5 marks each.
4. There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
5. Wherever necessary, neat and properly labeled diagrams should be drawn.

Section – A

Question 1.

As we go from species to kingdom in a taxonomic hierarchy, the number of common characteristics: (1)

(A) Will decrease (B) Will increase (C) Remain the same (D) May increase or decrease

Question 2.

Holdfast, stipe and frond constitute the plant body in case of: (1)

(A) Rhodophyceae (B) Chlorophyceae (C) Phaeophyceae (D) All of the above

Question 3.

Match the following and choose the correct option. (1)

Column I	Column II
(a) Family	(i) Tuberosum
(b) Kingdom	(ii) Polemoniales
(c) Order	(iii) Solanum

(d) Species	(iv) Plantae
(e) Genus	(v) Solanacea

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

Question 4.

During anaphase-I of meiosis: (1)

- (A) Homologous chromosomes separate
 (B) Non-homologous autosomes separate
 (C) Sister chromatids separate
 (D) Non-sister chromatids separate

Question 5.

A hormone responsible for normal sleep-wake cycle is: (1)

- (A) Epinephrine (B) Gastrin (C) Melatonin (D) Insulin

Question 6.

Which among the following a cell which does not exhibit phagocytic activity: (1)

- (A) Monocytes (B) Neutrophils (C) Basophil (D) Macrophage.

Question 7.

Knee joint and elbow joints are examples of: (1)

- (A) Saddle joint (B) Ball and socket joint (C) Pivot joint (D) Hinge joint

Question 8.

In which part of nephron does filtration of the blood takes place: (1)

- (A) Collecting duct (B) Renal corpuscle (C) PCT (D) DCT

Question 9.

Which one of the following is oviparous? (1)

- (A) Platypus (B) Flying fox (Bat) (C) Elephant (D) Whale

Question 10.

A nerve impulse leaves a neuron via the: (1)

- (A) Dendrites (B) Axon (C) Cyton (D) Nucleus

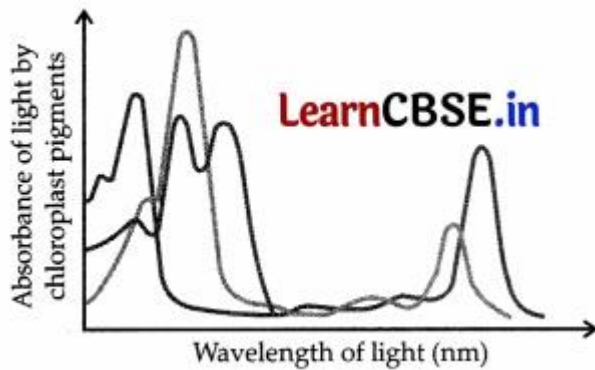
Question 11.

Which of the following statements is true for a secretory cell? (1)

- (A) Golgi apparatus is absent.
 (B) Rough Endoplasmic Reticulum (RER) is easily observed in the cell.
 (C) Only Smooth Endoplasmic Reticulum (SER) is present.
 (D) Secretory granules are formed in the nucleus.

Question 12.

Name the pigment whose absorption spectrum is not represented through the following graph. (1)



(A) Chlorophyll b (B) Carotenoids (C) Chlorophyll a (D) Xanthophyll

Directions: In the following questions, A statement of Assertion (A) 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.

Question13.

Assertion (A): Glucagon is known as a hyperglycemic hormone. (1)

Reason (R): Glucagon stimulates the liver to convert stored glycogen into glucose and increases the level of blood glucose.

Question14.

Assertion (A) : Human skull is described as dicondylic. (1)

Reason (R) : It articulates with the first vertebrae of the vertebral column by means of two occipital condyles.

Question15.

Assertion (A) : Palmitic acid is an unsaturated fatty acid. (1)

Reason (R) : These are fatty acids without double bond.

Question 16.

Assertion (A): Hypothalamus is called "thermostat" of the body. (1)

Reason (R): It keeps body temperature at roughly 37°C by means of a complex thermostat system.

Section – B

Question 17.

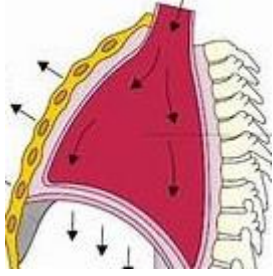
Why have unicellular algae not been kept in kingdom Protista by Whittaker? (2)

Answer:

A distinction between unicellular and multicellular organisms is not possible in case of algae. It is because of this unicellular green algae have not been included in kingdom Protista by Whittaker.

Question 18.

Study the given diagram: (2)



(a) Name the process shown in the above diagram.

(b) Explain the process.

Question 19.

Draw a neat labelled diagram of renal corpuscle

Question 20.



(a) Identify the given animal, and write down the name of the phylum to which it belongs.

(b) Give some more examples of this phylum (2)

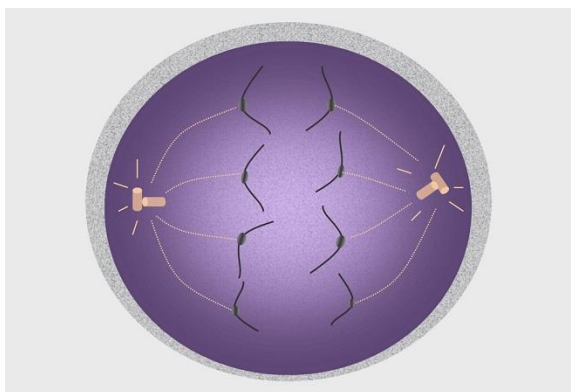
Question 21.

A student got injured someday. He took the medicine from the doctor and got cured. He wonders that how medicine got to know where to act. He asks the doctor about the reason. What could be the possible reason according to you? (2)

OR

(a) Label the given diagram .

(b) Determine the stage at which this structure is visible.



Section – C

Question 22.

Explain the mechanism of transmission of impulse along a neuron (3)

Question 23.

Describe the habit, habitat and morphology of mosses. (3)

Question 24.

Analyse the events during every stage of cell cycle and notice how the following two parameters change. (3)

(a) Number of chromosomes (n) per cell

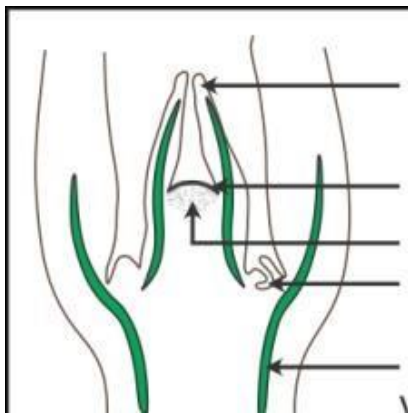
(b) Amount of DNA content per cell

Question 25.

Label the diagram. (3)

(a) Given diagram represent which part of a dicotyledonous plant?

(b) What will happen if we remove part 1 from the plant?



Question 26.

Does it make any difference to have the haemoglobin in the corpuscles rather than in plasma? Explain. (3)

Question 27.

Certain plants growing in tropical region suffer from photorespiratory loss. (3)

(a) How do they overcome it?

(b) Mention the anatomical adaptation.

(c) Mention the first stable CO_2 fixation product and the enzyme responsible for it.

OR

Enzymes are biological catalysts which accelerate chemical reactions. They are essential for different physiological processes. They are proteins that helps to speed up the process of metabolism.

(a)

(i) Name the enzyme that catalyses carboxylation as well as oxygenation reaction.

(ii) In which cell organelle is this enzyme found?

(b) In what way is that organelle different in the mesophyll and bundle sheath cells ?

Question 28.

Distinguish between endocrine and exocrine glands. (3)

Section – D

Question 29.

Animals belonging to phylum Chordata are fundamental characterised by the presence of a notochord, a dorsal hollow nerve cord and paired gill slits. These are bilaterally symmetrical, triploblastic, coelomate with organ-system level of organisation. They possess a post anal tail and a closed circulatory system

- (a) What are the three fundamental features of chordates?
(b) Give one example of Urochordata and Cephalochordata? (4)

Question 30.

Mitosis takes place both in somatic and reproductive cells of plants and animals. In multicellular organisms, mitosis produces more cells for growth and repair. Mitosis division is responsible for the growth and development of a single-celled zygote into a multicellular organism. Mitosis division helps in maintaining the proper size. Mitosis also helps in restoring wear and tear in body tissues, replacing damaged or lost part, healing wounds and regeneration of detached parts. Mitosis is a method of multiplication of unicellular organisms. It produces diploid daughter cells with identical genetic complements (both quantitatively and qualitatively) as in the parent cell. Mitosis is a continuous process and it is divided into four phases viz: prophase, metaphase, anaphase and telophase. (4)

- (a) What is the significance of mitosis?
(b) What happens during the mitotic cell division?
(c) What is the characteristic feature of mitosis? (4)

Section – E

Question 31.

Calvin cycle occurs in all photosynthetic plants whether they have C_3 or C_4 pathways. With the help of photosynthesis, plants turn light, carbon dioxide, and water into sugars that fuel plant growth using the primary photosynthetic enzyme RuBisCO. Various plant species on Earth use C_3 photosynthesis, and some show C_4 . (5)

With context to the given paragraph complete the following table :

Characteristics	C_3 Plants	C_4 Plants
Place of photosynthesis:		
CO_2 acceptor:		

Kranz anatomy:		
1 st stable product:		
Optimum temperature:		
Photorespiratory loss:		

OR

In relation with the Calvin cycle and photorespiration complete the following table, defining carboxylation and oxygenation:

Characteristics	Carboxylation	Oxygenation
Define:		
First step of the cycle:		
Acceptor molecule:		
Process:		

Question 32.

Each of the following terms has some anatomical significance. What do these terms mean? Explain with the help of line diagrams. (5)

- (a) Plasmodesmata/Plasmodesmata
- (b) Middle lamella
- (c) Secondary wall

OR

Flowers are determinate structures with a typically defined number of organs bearing pistillate and staminate parts. Floral formula helps to remember the characteristics of different families.

- (a) What is a floral diagram ?
- (b) What special features does a floral diagram inform?
- (c) Write down the floral formula for the family "Solanaceae".

Question 33.

- (a) What is root?
- (b) Briefly explain the regions or parts present in a typical root.
- (c) List any two adaptations of roots for support. (5)

OR

- (a) What is venation? Explain its types.
- (b) Distinguish between simple leaf and compound leaves with suitable examples.

•