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CLASS XI, ANNUAL EXAMINATION (2022-23)
BIOLOGY (CODE – 044)

Time: 3 Hours

Maximum Marks: 70

General Instructions:

- (i) All questions are compulsory.*
- (ii) The question paper has four sections: Section A, Section B, Section C Section D and Section E. There are 33 questions in the question paper.*
- (iii) Section–A has 16 questions of 1 mark each and. Section–B has 5 questions of 2 marks each. Section–C has 7 questions of 3 marks each and Section–D has 3 questions of 5 marks each Section E has 02 case-based questions of 4 mark each.*
- (iv) 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.*
- (v) Wherever necessary, neat and properly labelled diagrams should be drawn.*

Section – A

1. The group of fungi which are responsible for the diseases in plants called rusts and smuts belong to the class
a. phycomycetes b. ascomycetes c. basidiomycetes d. deuteromycetes
2. A plant having vascular tissues producing spores but lacking seeds can be grouped under
a. Angiospermae b. Gymnospermae c. Pteridophyta d. Bryophyta
3. Which of the following phyla has no fresh water animals?
a. Cordata b. Mollusca c. Echinodermata d. Arthropoda
4. In albuminous seeds food is stored in
a. Cotyledon b. Perisperm c. Endosperm d. Embryo
5. Which of the following represents a tissue system
a. Mesophyll b. Epidermis c. Vascular bundles d. All of these
6. A chromosome carrying centre mayor at one end is called
a. Acrocentric b. Sub metacentric c. Telocentric d. Metacentric
7. Chitin forming the exoskeleton of arthropods is a/an
a. Storage polysaccharide b. N containing structural polysaccharide
c. Mucopolysaccharide d. N containing structural oligopoly saccharide
8. The first accepted of carbon dioxide in C4 photosynthesis is
a. Ribulose 1,5- biphosphate pyruvate b. phosphoenol c. pyruvate d. glycerate
9. Senescence in plants is delayed by
a. Ethylene b. abscisic acid c. gibberellin d. cytokinin
10. The total lung capacity is represented by
a. Tidal volume + vital capacity
b. Residual volume + tidal volume
c. Vital capacity+ residual volume
d. Inspiratory capacity+ residual volume
11. Atrial natriuretic factor a n f released in response to an increased blood flow to the atria does not
a. Inhibit reabsorption of sodium from the filtrate
b. Stimulate aldosterone secretion
c. cause dilation of blood vessels
d. inhibit the release of renin from JG cells
12. The hormone which regulates the basic metabolism of the body is secreted from
a. Hypothalamus b. pituitary c. pancreas d. thyroid

Question No. 13 to 16 consist of two statements – Assertion (A) and Reason (R). Answer these questions selecting the appropriate option given below:

- A. Both A and R are true and R is the correct explanation of A
- B. Both A and R are true and R is not the correct explanation of A
- C. A is true but R is false
- D. A is False but R is true

13. Assertion: most red algae are marine

Reason: Red algae contains red pigment Anthocyanin.

14. Assertion: Krebs's cycle is amphibolic.

Reason: It involves both anabolism and catabolism.

15. Assertion: In the electrical synapse the transmission of impulse is faster than that in a chemical synapse.

Reason: In the electrical synapse the electrical current can flow directly from one neuron to the other.

16. Assertion: Plants have hormones called phytohormones.

Reason: They increase the rate of reaction and thus accelerate growth and other related changes.

Section- B

- 17. How are zoological parks useful to biologists?
- 18. Give two reasons to justify that the onion bulb is a modified stem.
- 19. Mention any four functions of the plant cell wall.
- 20. Describe Metaphase of mitosis.

OR

Name the stage of cell cycle at which each of the following events occurs:

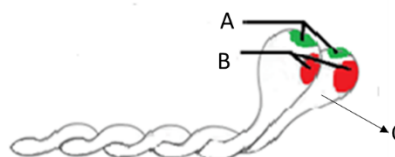
- (a) Chromosomes are moved to spindle equator.
 - (b) Centromere splits and chromatids separate.
 - (c) Pairing between homologous chromosomes takes place.
 - (d) Crossing over between homologous chromosomes takes place.
21. What is respiratory substrate? Name the most common respiratory substrate.

Section- C

- 22. How is a pinnately compound leaf different from palmately compound leaf?
- 23. Name the three basic tissue systems in flowering plants. Give the tissue names under each system.
- 24. Differentiate between cyclic and non-cyclic photophosphorylation.
- 25. Give a schematic representation of Krebs's cycle.
- 26. A diagrammatic sketch of a myosin filament is given above. Answer the following questions.

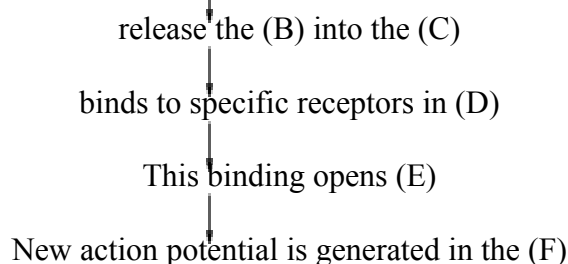
a. Identify the following in the diagram of myosin filament.
 i. ATP binding site
 ii. Actin binding site

Name the monomers of myosin
 Expand: i. HMM ii. LMM



27. The following flow chart depicts the events in synaptic transmission. Fill in the blanks (A), (B), (C), (D), (E) and (F).

When the action potential arrives at the axon terminal, the (A) present there move towards and fuse with the plasma membrane.



OR

Draw a diagram of a typical multipolar neuron and label six parts in it.

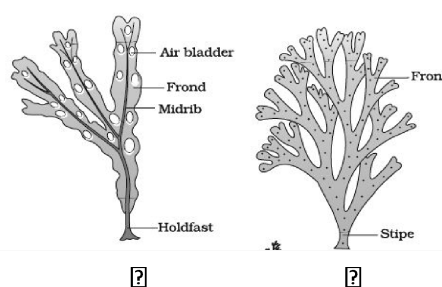
28. Fill up the blank spaces i to vi in the table given below:

S.No.	Name of Endocrine gland	Secreted hormone	Function of the hormone
A	Pituitary	i	Reabsorption of water and electrolytes in kidney
B	ii	Insulin	iii
C	Thymus	Thymosin	iv
D	Ovary	v	Development of growing ovarian follicles
E	vi	Thyroxine	Controls metabolism of proteins, fats and carbohydrates

Section- D

29. Two members of a class of algae are shown below. Observe the figures and answer the following questions:

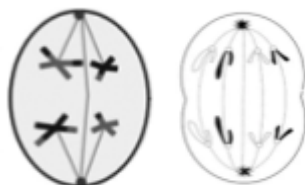
- Identify the two algae A and B.
- Name (i) the class, which both of them belong to and (ii) the pigment that gives them the characteristic colour.
- Mention the forms of their stored food.
- Mention the function of (i) holdfast and (ii) stipe, labelled in the figure.



30. Describe in detail the structure of a sarcomere.

31. Study the two stages of cell division in the given figure and answer the following questions that follow:

- Identify the stages and the type of cell division in A and B.
- Write one major difference between the two.
- What is the consequence of the events shown in A and B, respectively?



OR

Describe in detail the events in Prophase I of meiosis.

Section E

Read the following and answer the questions given below:

32. Coral reefs are very beautiful, brightly coloured backgrounds for serene snorkelling experiences. The stunning colours in corals come from a marine alga called zooxanthellae, which live inside them. These algae do photosynthesis for the corals so that the corals get energy to grow and reproduce. When corals get environmental stresses like heat or pollution, they react by expelling these algae, leaving a ghostly, transparent skeleton behind. This is known as 'coral bleaching'. Without zooxanthellae most corals starve and would die. At least a quarter of the world's marine life needs coral reefs around the world are disappearing fast. At the local level, Water pollution, overfishing and coastal development are taking their toll on coral reefs. At worldwide level, carbon pollution is warming our oceans and causing corals releases carbon pollution into the air, which is heating our planet and warming our oceans. If we continue to pollute the air and the ocean with carbon emissions at our high rate, coral reefs around the world will face a catastrophic future in coming decades - in our lifetime.

1. To which of the following phylum coral reefs belong?

- (a) Echinodermata (b) Platyhelminthes (c) Cnidaria (d) Porifera

2. Corals are made by deposition of
 (a) Endoskeleton made up of silica (b) Exoskeleton made of protein fibre
 (c) Exoskeleton made up of calcium carbonate (d) Endoskeleton made up of protein fibres
3. Which one the following could not be a possible reason for coral bleaching?
 (a) Water pollution (b) Carbon pollution (c) Soil pollution (d) Overfishing and coastal development
4. The type of association shown by zooxanthellae and corals is known as
 (a) Commensalism (b) Symbiotic (c) Predation (d) Parasitism

33. Almost all enzymes are proteins. There are some nucleic acids that behave like enzymes. These are called ribozymes. An enzyme like any protein has a primary structure, i.e., amino acid sequence of the protein. An enzyme like any protein has the secondary and the tertiary structure. When you look at a tertiary structure you will notice that the backbone of the protein chain folds upon itself, the chain criss-crosses itself and hence, many crevices or pockets are made. One such pocket is the 'active site'. An active site of an enzyme is a crevice or pocket into which the substrate fits. Thus enzymes, through their active site, catalyse reactions at a high rate. Enzyme catalysts differ from inorganic catalysts in many ways, but one major difference needs mention. Inorganic catalysts work efficiently at high temperatures and high pressures, while enzymes get damaged at high temperatures (say above 40°C). However, enzymes isolated from organisms who normally live under extremely high temperatures (e.g., hot vents and sulphur springs), are stable and retain their catalytic power even at high temperatures (upto 80°-90°C). Thermal stability is thus an important quality of such enzymes isolated from thermophilic organisms.

1.) _____ is the pocket like region of an enzyme into which substrate molecules bind.

- a) Protein site
- b) Co-factors
- c) Coenzyme
- d) Active site

2.) Identify incorrect statement

Statement 1 – Nucleic acids which behave like enzymes are commonly termed as nucliozymes.

Statement 2 – An enzyme like any protein has a primary, secondary and the tertiary structure.

Statement 3 – Enzyme catalysts differ from inorganic catalysts in many ways.

Statement 4 – All enzymes are proteins.

- a.) Only 1
- b) Both 1 & 3
- c) Only 3
- d.) None of the above

3.) _____ preserve the enzyme and keep them in temporarily inactive state.

- a.) Optimum pH
- b) Low pH
- c) Optimum temperature
- d) Low temperature

4.) _____ is a chemical compound or molecule which is responsible for decrease or stop the enzyme activity by binding to an enzyme.

- a.) Catalyser
- b) Inhibitor
- c) Regulator
- d) Controller