



विद्या सर्वार्थ साधिका

ANANDALAYA  
ANNUAL EXAMINATION  
Class : XI

Subject: Biology  
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MM :70  
Time: 3 hours

General Instructions:

- i. This question paper consists of five sections with 33 questions.
- ii. All the questions are compulsory. However, internal choice is provided in certain questions. A student has to attempt only one of the options.
- iii. Section A consists of 12 objective type questions and 4 assertion- reason type questions carrying 01 mark each.
- iv. Section B consists of 5 very short answer questions carrying 02 marks each. Answers to these questions should be in the range of 30 to 50 words.
- v. Section C consists of 7 questions carrying 03 marks each. Answer to these questions should be in the range of 50 to 80 words.
- vi. Section D consists of 2 case based questions carrying 04 marks each.
- vii. Section E consists of 3 questions of 5 marks each.
- viii. Where ever necessary, neat and properly labelled diagrams should be drawn.

SECTION A

Select and write one most appropriate option out of the four options given for each question 1-12

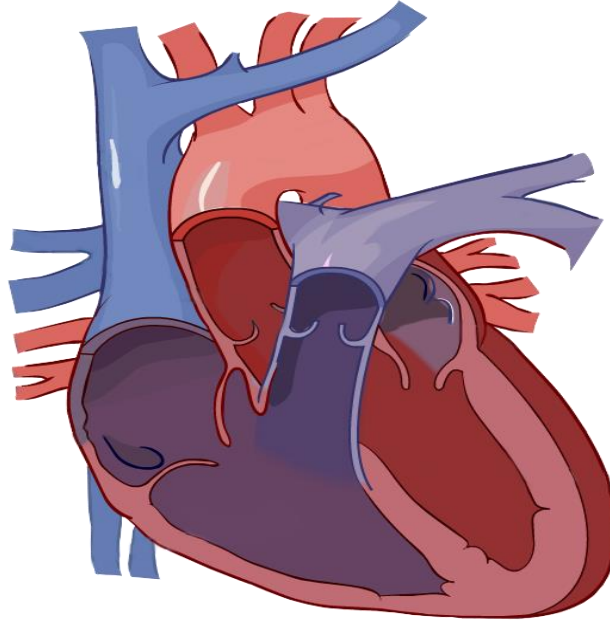
1. Both adrenaline and cortisol are secreted in response to stress. Which of the following statement (1)  
is also true for both the hormones?  
(A) They act to increase the blood pressure  
(B) They are secreted by the adrenal cortex  
(C) Their secretion is stimulated by adrenocorticotrophin  
(D) They are secreted into the blood within seconds of onset of stress
2. Energy required for ATP synthesis comes from \_\_\_\_\_ (1)  
(A) proton gradient (B) electron gradient  
(C) reduction of glucose (D) oxidation of glucose
3. Crossing over that results in genetic recombination in higher organisms occurs between \_\_\_\_\_. (1)  
(A) non-sister chromatids of a bivalent (B) two daughter nuclei  
(C) two different bivalents (D) sister chromatids of a bivalent
4. Birds and mammals share one of the following characteristics as a common feature. It is \_\_\_\_\_. (1)  
(A) pigmented skin (B) alimentary canal with some modification  
(C) vivipary (D) warm blooded nature
5. Which of the following is not a poisonous snake? (1)  
(A) Cobra (B) Viper  
(C) Python (D) Krait

6. Match the following with the correct response: (1)

(i) Proximal convoluted tubule	(a) formation of concentrated urine
(ii) Distal convoluted tubule	(b) filtration of blood
(iii) Henle's loop	(c) re-absorption of 70-80% of electrolyte
(iv) renal corpuscle	(d) ionic balance

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

7. In the given diagram, which vessel represents the vena cava? (1)



- (A) a                      (B) b                      (C) c                      (D) d

8. Cellular organelles with membrane are: (1)

- (A) lysosomes, Golgi apparatus and Mitochondria  
 (B) nuclei, ribosomes and mitochondria  
 (C) chromosomes, ribosomes and endoplasmic reticulum  
 (D) endoplasmic reticulum, ribosomes and nuclei

9. Coconut milk contains \_\_\_\_\_ plant hormone. (1)

- (A) ABA      (B) Auxine                      (C) Cytokinin                      (D) Gibbrellin

10. The process used in conversion of pyruvate to acetyl CoA is \_\_\_\_\_. (1)

- (A) Oxidative decarboxylation                      (B) oxidative dehydration  
 (C) oxidative dehydration                      (D) oxidative dehydrogenation

11. The end product of oxidative decarboxylation is \_\_\_\_\_. (1)

- (A) NADH                      (B) Oxygen  
 (C) ADP                      (D) ATP + water

12. At which stage of meiosis does the genetic constitution of gametes is finally decided? (1)

- (A) metaphase-i                      (B) anaphase-ii  
 (C) metaphase -ii                      (D) anaphase-i

Q. 13 to 16 consists of two statements- Assertion(A) and Reason (R). Answer these questions selecting the appropriate options 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 and R is false.
- D. A is false but R is true.

13. **Assertion:** The viruses are not considered as organisms. (1)  
**Reason:** Viruses are merely nucleoprotein particles and lack cytoplasm and metabolic machinery.
14. **Assertion:** Minerals do not form a component of biologically active compounds. (1)  
**Reason:** Some persons suffer from anaemia due to iron deficiency.
15. **Assertion:** Fermentation is a wasteful process. (1)  
**Reason:** It yields only 5% of the energy provided by aerobic respiration.
16. **Assertion:** Dicot stem and monocot stem have the same anatomy. (1)  
**Reason:** Dicot stem undergoes secondary thickening.

#### SECTION – B

17. “All vertebrates are chordates but all chordates are not vertebrates”. Justify this statement. (2)
18. An oviparous or viviparous animal produces large number of young ones. Justify this statement. (2)
19. Describe the events taking place during interphase. (2)
20. The role of ethylene and abscisic acid both are positive and negative. Justify this statement. (2)
21. Mention the two categories of hypothalamic hormones and their functions. Give one example for each. (2)

OR

What is the role of secondary messengers in hormone action?

#### SECTION – C

22. Nucleic acids exhibit secondary structure. Explain how Watson and Crick suggested the structural model of DNA. (3)
23. Which are the two types of Hypothalamic hormones? Give the functions of each. (3)
24. Succulents are known to keep their stomata closed during the day to check transpiration. How do they meet their photosynthetic carbon requirement? Give details of the process. (3)
- OR
- What is photorespiration? Is it beneficial to the plants? How is the productivity of the plants that undergo this?
25. (a) What is meant by photoperiodism? (3)  
(b) How are plants classified based on this behavior?  
(c) Is it a misnomer? Explain.
26. (a) Explain the different modes of transport of carbon dioxide in the blood. (3)  
(b) Cigarette smoking causes emphysema. Give reason.
27. What is the chemical structure of lipids that give them their unique physical and chemical properties? Explain with examples. (3)

28. All multicellular organisms start life as single cell or zygote. New cells arise by division of the preexisting cells. Answer the following questions. (3)
- (a) Write important difference between plant cell cytokinesis and animal cell cytokinesis.
  - (b) Differentiate between non-sister chromatids and sister chromatids.
  - (c) What is G<sub>0</sub> phase of cell cycle?

#### SECTION – D

Questions 29 and 30 are case based questions. Attempt any four out of the 5 questions in each one.

29. In our body, myriad of chemical reactions occur as part of metabolism. These reactions are catalysed by enzymes. Almost all enzymes are proteins. They have primary, secondary, tertiary and the final functional form. They are specific in their function and have unique structure and properties. (4)
- (a) How does temperature affect enzyme action?
  - (b) What is meant by activation energy of enzyme?
  - (c) What is the basis of classification of enzymes?
  - (d) Give an example for an enzyme and its cofactor.
  - (e) Name the fastest enzyme in the animal world.
30. All multicellular organisms start life with a single cell called zygote. The continuity of life starts with cell reproduction or cell division. Cells use two methods to divide themselves. There are sequential events that the cells go through during their existence, which is called cell cycle. (4)
- (a) Why is cell division necessary?
  - (b) What is interkinesis?
  - (c) Name the chemical used to arrest cell division at metaphase which is known as mitotic poison?
  - (d) What do you mean by homologous chromosomes?
  - (e) How many times DNA replicates in meiosis?

#### SECTION – E

31. Give an account of electron transport chain in which energy from NADH + H<sup>+</sup> and NADH<sub>2</sub> are released? Diagrammatically represent ATP synthesis in mitochondria. (5)
- OR**
- (a) Why is respiration called amphibolic pathway? Explain.
  - (b) Why is Oxygen required in aerobic respiration? Explain.
  - (c) Calculate RQ for carbohydrate.
32. (a) With the help of a labelled diagram, explain how urine is formed through three processes in human kidney. (5)
- (b) What is the evolutionary significance of human kidney?
- OR**
- (a) Explain the circulatory pathway operating in human heart including impulse transmission and cardiac rhythm using the diagram showing the anatomy of heart.
  - (b) Name one heart disease.
33. (a) Which are the factors affecting photosynthesis? Analyse how each one influences its rate. (5)
- (b) What does the chemiosmotic hypothesis of ATP synthesis suggest?
- OR**
- (a) What are phytohormones?
  - (b) What would you suggest to increase in the yield of sugarcane?
  - (c) Taking the examples of Auxines and Cytokinins explain
    - (i) a synergistic action in plants.
    - (ii) an antagonistic action in plants.