

Name of Student: Anyali D/o Omkar

Pre-Board Assessment - January 2024

Roll no. 07

CLASS: 12

Subject: Biology

Time allowed: 3 hours

Maximum Marks: 70

GENERAL INSTRUCTIONS:

- (i) All questions are compulsory.
- (ii) This question paper contains 35 questions which are divided into five sections A, B, C, D, E.
- (iii) Section A contains 18 questions. Question from 1 to 14 are multiple choice questions. Each question carries four options from which mark the correct option. The question no. from 15 to 18 is Assertion Reason type questions. Each question carries 1 mark.
- (iv) Section B contains 7 very short answer type questions and carry 2 marks each.
- (v) Section C contains 5 short answer type questions and carry 3 marks each.
- (vi) Section D contains 2 case study questions and carry 4 marks each.
- (vii) Section E contains 3 long answer type questions and carry 5 marks each.
- (viii) Internal choices are available in questions of Section B, C, D, E. You have to attempt only one of the given choice in such questions.

SECTION-A (OBJECTIVE TYPE QUESTIONS)

Each question carries 1 mark.

1. Relaxin hormone is secreted by:
(a) Rete testis (b) Leydig cells (c) Ovary (d) Fallopian tube
2. Which of the following is not a wall layer of the microsporangium?
(a) Epidermis (b) Endothecium (c) Endothelium (d) Tapetum
3. How many male gametes are formed in a single male gametophyte.
(a) 2 (b) 4 (c) 6 (d) 8
4. Convergent evolution is shown by
(a) Eye of octopus and mammals (b) Sweet potato and potato
(c) Flippers of penguins and dolphins (d) All of the above
5. In a transcription unit, the promoter is located towards
(a) 5' end of the structural gene (b) 3' end of structural gene
(c) 5' end of the template strand (d) 3' end of the coding strand

6. In eukaryotes, RNA II facilitates transcription of _____
 (a) rRNA (b) mRNA (c) tRNA (d) hnRNA
7. Which of the following is a recessive trait for a character chosen by Mendel in garden pea?
 (a) Violet flower color (b) Yellow pod colour
 (c) Axial flower position (d) Tall stem height
8. Which of the following is a viral disease?
 (a) Diphtheria (b) Filariasis (c) Leprosy (d) Influenza
9. Which of these processes does not give off CO_2 ?
 (a) Lactate fermentation (b) Aerobic respiration
 (c) Alcoholic fermentation (d) None of the above
10. Agarose extracted from sea weeds finds use in _____.
 (a) Spectrophotometry (b) Gel electrophoresis
 (c) PCR (d) Tissue culture
11. The first ever human hormone produced by recombinant DNA technology is _____.
 (a) Progesterone (b) Insulin (c) Estrogen (d) Progestrone
12. Darwinian fitness is represented by:
 (a) Low r value (b) High r value (c) High K value (d) Low K value
13. The upright pyramid of numbers is absent in
 (a) Forest (b) Grassland (c) Pond (d) Lake
14. Which of the following is not a method of ex-situ conservation?
 (a) Cryopreservation (b) In vitro fertilization
 (c) National parks (d) Micropropagation

(15-18) Assertion-Reason type questions: These question consists of two statements each printed as Assertion and Reason. While answering these questions you are required to choose any one of the following responses

- (a) If both Assertion and Reason are true and Reason is the correct explanation of Assertion.
 (b) If both assertion and Reason are true but Reason is not the correct explanation of Assertion.
 (c) If Assertion is true but Reason is false.
 (d) If both Assertion and Reason are false.
15. Assertion: Cross of F1 individual with recessive homozygous parent is _____
 Reason: No recessive individual are obtained in the monohybrid _____

_____ cross.
 _____ cross progeny.

16. Assertion: Histones are basic in nature.
(a) Reason: Histones are rich in the amino acids lysine and arginine.
17. Assertion: Living organisms are regarded as open systems.
(a) Reason: Energy of living organisms can be lost or gained from external environment.
18. Assertion: Seminiferous tubules are lined by male germ cells and sertoli cells.
(b) Reason: Seminiferous tubule is structural and functional unit of testes.

SECTION-B (VERY SHORT ANSWER TYPE QUESTIONS)

Each question carries 2 marks.

19. Give a brief account of male accessory glands.
20. What is a role of Single cell protein in human diet?
21. What is apomixis and what is its importance?
22. Which Alkaloid is found in tobacco? What is its effect on human body?

OR

- How STDs can be prevented?
23. What is the theory of spontaneous generation? Name the scientist who dismissed it?
24. Try the genetic cross of the following: $AaBb$, $AABb$.
25. What is RED LIST?

OR

Write about the pyramid of biomass in a marine ecosystem.

SECTION-C (SHORT ANSWER TYPE QUESTIONS)

Each question carries 3 marks.

26. What is CRY gene? What is its role in making GM crops?
27. Define PCR and for what purpose it is used in diagnosis?
28. Differentiate the following and give examples of each.
(a) Innate and Acquired immunity (b) Active and passive Immunity
29. Draw a well labeled diagram of L.S. of ovule at the time of fertilization.

OR

Draw a labeled diagram of a section through ovary.

30. Microbes can be used to decrease the use of chemical fertilizers and pesticides. Explain how this can be accomplished?

OR

Draw the stages of the life cycle of a Plasmodium.

SECTION D: CASE STUDY QUESTIONS.

Each question carries 4 marks.

Read the following passage carefully and answer the following questions:

31. In prokaryotes, DNA is circular and present in the cytoplasm but in eukaryotes, DNA is linear and mainly confined to the nucleus. DNA is a long polymer of nucleotides. In 1953, the first correct double helical structure of DNA was worked out by Watson and Crick. It is composed of three components, i.e. A phosphate group, a deoxyribose sugar and a nitrogenous base. Different forms of DNA are B-DNA, A-DNA, Z-DNA, C-DNA.

- (a) Name the linkage present between the nitrogen base and pentose sugar in DNA. 1
(b) Do eukaryotes also have circular DNA? If yes, then specify where?

OR

Explain the various types of bonds present in DNA.

- (a) Human possess which form of DNA B-DNA 2
1

32. Tools used in the formation of recombinant DNA are of three types. These are enzymes, cloning vectors and competent host. Lysing enzymes are used to extract DNA for experimental purpose from the cells. Cleaving enzymes break the DNA molecules. They are of three types: exonucleases, endonucleases and restriction endonucleases. A competent host is required for transformation with recombinant DNA and cloning vectors help to propagate DNA.

- (a) What are cloning vectors?

OR

- Differentiate between exonucleases and endonucleases.
(b) Transfer of DNA into eukaryotic cell is called _____ 2
(c) Enzymes used in R DNA technology are _____ 1
1

SECTION E: LONG ANSWER TYPE QUESTIONS

Each question carries 5 marks.

33. Describe the structure of human sperm.

Or

What is placenta? Write down its functions.

34. State and explain Law of independent assortment.

OR

Describe Meselson and Stahl's experiment to prove semiconservative DNA replication.

35. What are the various causes of species extinction in ecosystem?

OR

Define Decomposition and describe the process and products of decomposition.