

Total number of printed pages : 4

NB/XII/BIO/1

2023
BIOLOGY

Total marks : 70

Time : 3 hours

General instructions:

- i) *Approximately 15 minutes is allotted to read the question paper and revise the answers.*
- ii) *All questions are compulsory. Marks are indicated against each question.*
- iii) *The question paper consists of two parts – Part A and Part B.
Each part contain 14 questions.*
- iv) *Internal choice has been provided in some questions.*
- v) *Write the answers of Part A and Part B in separate answer books.
Marks shall not be awarded if the answers of both the Parts are written in one book nor marks awarded if answers of Part A are written in the answer book of Part B and vice-versa.*

N.B: *Check that all pages of the question paper is complete as indicated on the top left side.*

PART - A

1. Which of the following is an example of free nuclear endosperm? **1**
(a) Coconut water (b) Castor
(c) Sugarcane juice (d) Groundnut
2. The removal of anthers from the flower bud before the anther dehisces by using a pair of forceps is called **1**
(a) bagging (b) emasculation
(c) hybridisation (d) apomixis
3. The length of DNA in Escherichia coli has **1**
(a) 5386 bp (b) 48502 bp
(c) 4.6×10^6 bp (d) 3.3×10^9 bp
4. Pyramid of number in a grassland ecosystem is **1**
(a) upright (b) spindle shaped
(c) inverted (d) none of these
5. What trend is observed in respect of species diversity when we move from the equator to the pole? **1**
(a) Diversity decreases
(b) Diversity increases
(c) Diversity remains the same
(d) Diversity first decreases and then increases

6. a. Differentiate between template strand and coding strand. 2
Or
- b. Who gave the experimental proof on 'Transforming Principle'? Name the bacteria used in the experiment.
7. a. If the sequence of one strand of DNA is 5'-AGTCGGACTTGA-3', what will be the sequence of complementary strand in 3'→5' direction? 2
Or
- b. Differentiate between exons and introns.
8. a. What is downstream processing? 2
Or
- b. Mention two methods to introduce alien DNA into host cells.
9. a. Draw a well labelled diagram of a typical anatropous ovule. 3
Or
- b. Draw a well labelled diagram of L.S of a flower showing growth of pollen tube.
10. a. What is triple fusion? Where does it take place? Name the nuclei involved in triple fusion. 3
Or
- b. Write the three characteristic features of wind-pollinated flowers.
11. a. Distinguish between primary and secondary productivity. Give the expression for productivity. 3
Or
- b. Write a brief note on the three categories for conservation of biodiversity.
12. a. Explain the experimental proof of semi-conservative DNA replication given by Meselson and Stahl. 5
Or
- b. Discuss the salient features of double helix structure of DNA.
13. a. Explain in detail the role of restriction enzymes in recombinant DNA technology with diagram. 5
Or
- b. What is PCR? Explain the amplification of gene using PCR.
14. a. Give a detailed account of energy flow in an ecosystem. 5
Or
- b. Define biodiversity. Explain the causes of loss of biodiversity.

PART - B

1. Leydig cells secretes 1
 (a) Estrogens (b) Androgens
 (c) Progesterone (d) Corticosterone
2. Down's syndrome is caused due to 1
 (a) XXY (b) XO
 (c) Trisomy 21 (d) XXXY
3. Bacillus thuringiensis is used for controlling _____ pest. 1
 (a) bacterial (b) nematodes
 (c) fungal (d) insect
4. GEAC stands for 1
 (a) Gene Engineering Approval Committee
 (b) Genetic Engineering Approval Commission
 (c) Gene Engineering Assay Committee
 (d) Genetic Engineering Approval Committee
5. When one organism benefits and the other is harmed, then it is known as 1
 (a) Commensalism (b) Parasitism
 (c) Competition (d) Mutualism
6. a. Why is colostrum considered to be essential for the newborn infant? 2
Or
 b. Differentiate between tubectomy and vasectomy.
7. a. What is pleiotropy? Give one example. 2
Or
 b. Write two paleontological evidences that support evolution.
8. a. List any two important characteristics of a population and explain briefly. 2
Or
 b. What is the relationship between predator and prey?
9. a. What is Thalassemia? How is Thalassemia different from Sickle-cell anaemia? 3
Or
 b. Give a diagrammatic representation of Miller's experiment.
10. a. What is a pathogen? Name the parasites that causes 3
 (i) Ascariasis (ii) Elephantiasis
Or
 b. What is BOD? Explain the biological treatment of sewage.

11. **a.** State the role of C peptide in human insulin. **3**
Or
- b.** What is biopiracy? How are the industrialized nations exploiting the bio-resources and traditional knowledge of the developing nations?
12. **a.** Explain the process of spermatogenesis with a well labelled diagram. **5**
Or
- b.** What is the criteria of an ideal contraceptive? Briefly explain any two contraceptive methods.
13. **a.** State Mendel's Laws of Inheritance and explain it with suitable crosses. **5**
Or
- b.** Write a note on human evolution.
14. **a.** What causes AIDS? Explain the mode of action of AIDS virus. **5**
Or
- b.** Explain the role of microbes in energy generation.