

2022
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 answer book nor marks awarded if answers of Part A are written in the answer book of Part B and vice-versa.*

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

PART - A

1. Gemmules are found in 1
(a) Penicillin (b) Amoeba
(c) Hydra (d) Sponge
2. Pollen grains that are light and non-sticky are usually carried by 1
(a) wind (b) water
(c) insects (d) birds
3. In replication, the discontinuously synthesized fragments are joined by which enzyme? 1
(a) DNA polymerase (b) Restriction endonuclease
(c) DNA ligase (d) Restriction exonuclease
4. The capacity to generate a whole plant from any cell/explant is called _____ 1
(a) Totipotency (b) Biofortification
(c) Somatic hybridization (d) Micropropagation
5. The Earth Summit (Convention on biological diversity) was held in 1
(a) Rio de Janeiro 1992 (b) Rio de Janeiro 2002
(c) Johannesburg 1992 (d) Johannesburg 2002
6. a. Differentiate between microsporogenesis and megasporogenesis. 2
Or
b. Write two points of differences between geitonogamy and xenogamy.

7. a. What is ecosystem? Name the components of the ecosystem. 2
Or
b. What is green house effect? Suggest two measures to control global warming.
8. a. What are sacred groves? What is their role in biodiversity conservation? 2
Or
b. What is meant by co-extinction? Give one example.
9. a. Draw a neat labelled diagram of a complete flower. 3
Or
b. Draw a neat labelled diagram of a mature embryo sac.
10. a. Write three features of genetic code. 3
Or
b. Write any three silent features of Human Genome Project.
11. a. What is plant breeding? Name two hybrid varieties of a crop. 3
Or
b. What is micropropagation? Give two benefits of micropropagation.
12. a. What is an operon? Describe the working of Lac Operon. 5
Or
b. Explain transcription unit with schematic representation.
13. a. What are cloning vectors? Explain the features of cloning vectors. 5
Or
b. Describe briefly the steps involved in the process of recombinant DNA technology.
14. a. Describe the three types of ecological pyramids. Give two limitations of ecological pyramids. 5
Or
b. What is biomagnification? Explain the biomagnification of DDT in an aquatic food chain.

PART - B

1. After ovulation, the ruptured Graafian follicle changes into 1
(a) Corpus striatum (b) Corpus luteum
(c) Corpus albicans (d) None of these
2. HIV is not transmitted by 1
(a) Blood transfusion (b) Sharing of injection
(c) Hugging (d) Infected mother to child

3. Forelimb of frog and forelimb of human is an example of 1
(a) Homologous organs (b) Analogous organs
(c) Vestigial organs (d) Rudimentary organs
4. Gobar gas contains mainly 1
(a) CH₄ and CO₂ (b) CH₄ and O₂
(c) CH₄ and H₂ (d) CH₄ and H₂O
5. Which mammal excretes concentrated urine to conserve water? 1
(a) Kangaroo rat (b) Camel
(c) Squirrel (d) Polar bear
6. a. Explain the inheritance of haemophilia in the offsprings, if a normal female marries a haemophilic male. 2
Or
b. What are the similarities found between man and great apes on the basis of molecular studies?
7. a. Draw a well labelled diagram of an antibody molecule. 2
Or
b. What is biological nitrogen fixation? Which organism fixes atmospheric nitrogen in the root of legumes?
8. a. What is biopiracy? How are industrialised nations exploiting the bioresources? 2
Or
b. What is biotechnology? Give two applications of biotechnology.
9. a. Briefly describe sex determination in honey bee. 3
Or
b. Write three embryological evidences that support evolution.
10. a. What are 'cry' proteins? Name an organism that produce it. How has man exploited this protein to his benefit? 3
Or
b. Why do lepidopterans die when they feed on Bt-cotton plant?
11. a. What adaptation help parasites to sustain? 3
Or
b. With the help of a suitable diagram, describe the logistic population growth curve.

12. **a.** Explain the process of fertilization with diagram. **5**
Or
b. What is ART? Suggest some methods to assist infertile couples to have children.
13. **a.** Explain in detail, incomplete dominance and multiple alleles with examples. **5**
Or
b. Describe Oparin-Haldane theory on origin of life.
14. **a.** What is innate immunity? Explain the four types of barriers of innate immunity. **5**
Or
b. What are antibiotics? Who discovered penicillin? Name the source from where antibiotic penicillin has been derived. Write two properties of antibiotics.
