

**2017  
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. In porogamy, pollen tube enters the ovule through the\_\_\_\_\_ **1**  
(a) chalazal (b) integument  
(c) micropyle (d) nucellus
2. Grafting is not possible in monocotyledons because **1**  
(a) vascular bundles are endarch  
(b) vascular bundles are exarch  
(c) vascular bundles are closed  
(d) vascular bundles are scattered
3. According to Chargaff's rule, which one is correct? **1**  
(a)  $A + T = G + C$  (b)  $A + C = G + T$   
(c)  $A + G = T + C$  (d) none of these
4. The main purpose of embryo culture is for **1**  
(a) production of haploid plants  
(b) production of virus free plants  
(c) protoplast fusion  
(d) embryo rescue

5. The species listed in Red Data Book are 1  
 (a) threatened (b) endangered  
 (c) rare (d) all of these
6. Write any two points of difference between self pollination and cross pollination. 2
7. Define productivity. Mention the two types of productivity. 2
8. Differentiate between *In situ* and *Ex-situ* approaches of conserving biodiversity. 2
9. Draw a neat labelled diagram of L.S of ovule. 3
10. **a.** List out the various enzymes involved in DNA replication with one function each. 3  
**Or**  
**b.** What is translation? Mention the various steps involved in translation.
11. What is single cell protein? Write any two uses of SCP. 3
12. **a.** Enumerate the essential features of genetic code. 5  
**Or**  
**b.** Explain the Watson and Crick model of DNA with the help of a labelled diagram.
13. **a.** What are cloning vectors? Give a brief account on the characteristics of cloning vectors. 5  
**Or**  
**b.** Explain the amplification of gene of interest using PCR.
14. **a.** Define ecological pyramid. Explain in brief the different types of ecological pyramids. 5  
**Or**  
**b.** What is green house effect? Explain the effects of global warming.

### PART –B

1. The embryo at 16-celled stage is known as 1  
 (a) morula (b) gastrula  
 (c) blastula (d) blastomere

2. The function of copper-T is to prevent 1  
 (a) fertilization (b) egg maturation  
 (c) ovulation (d) implant of blastocyst
3. The recessive gene located on X-chromosome in human are always 1  
 (a) lethal (b) sub-lethal  
 (c) expressed in male (d) expressed in female
4. *Bacillus thuringiensis* is used as 1  
 (a) biofertilizer (b) biopesticide  
 (c) biocontroller (d) bioweapon
5. The association of animals when both partners are benefitted is 1  
 (a) commensalism (b) amensalism  
 (c) mutualism (d) parasitism
6. What is pleiotrophy? Give one example. 2
7. What is autoimmune disease? Give two examples. 2
8. Give significance of transgenic organisms citing two examples. 2
9. a. Differentiate between linkage and crossing over. 3  
**Or**  
 b. Discuss about genetic variation in a population that leads to evolution.
10. What is gene therapy? Give a brief account on the two types. 3
11. Discuss the effects of temperature on animals. 3
12. a. What is menstrual cycle? Explain the various phases of menstrual cycle. 5  
**Or**  
 b. Explain the techniques used for detection of foetal disorders during early pregnancy.
13. a. What are sex chromosomes? Explain the determination of sex in man. 5  
**Or**  
 b. Explain Darwin's theory of evolution of natural selection.
14. a. What is cancer? Explain the four types of cancer. 5  
**Or**  
 b. Discuss the biological methods for the control of insect pests.