



PON VIDYASHRAM GROUP OF CBSE SCHOOLS

VACATION HOME TEST (2017-2018)

STD XII

BIOLOGY

- Please check that this question paper contains **6** printed pages.
- Code number given on the right hand side of the question paper should be written on the title page of the answer-book by the candidate.
- Please check that this question paper contains **26** questions.
- Please write down the Serial Number of the question before attempting it.
- 15 minutes time has been allotted to read this question paper:

BIOLOGY (THEORY)

Time allowed : 3 hours

Maximum Marks : 70

General Instructions:

- All questions are compulsory.*
- This question paper consists of five Sections A, B, C, D and E. Section A contains 5 questions of **one** mark each, Section B contains 5 questions of **two** marks each, Section C contains 12 questions of **three** marks each, Section D contains **one** question of **four** marks and Section E contains 3 questions of **five** marks each.*
- There is no overall choice. However, an internal choice has been provided in **one** question of 2 marks, **one** question of 3 marks and all **three** questions of 5 marks weightage. A student has to attempt only **one** of the alternatives in such questions.*
- Wherever necessary, the diagrams drawn should be neat and properly labelled.*

SECTION-A

1. Autogamy can occur in a bisexual chasmogamous flower. Mention two conditions that favour autogamy in it.
2. A segment of DNA has 1000 nucleotides, of which 300 are guanine-nucleotides. What will be the number of:
 - (a) pyrimidine nucleotides
 - (b) adenine-nucleotides in this DNA?
3. Mention the source of thermostable DNA polymerase and the step in PCR which it catalyses.
4. How are seals adapted to the conditions in their natural habitat?
5. RNA was the first genetic material; yet DNA has become the genetic material in most of the organisms. Mention two reasons for it.

SECTION-B

6. All reproductive tract infections (RTIs) are sexually transmitted diseases (STDs) but not all STDs are RTIs. Justify.
7. The evolutionary story of Industrial melanism in England showed that in a mixed population, the individuals which can adapt better, survive and increase in population size, but no variant is completely wiped out. Analyse the situation and give reasons for the observations.
8. Give reason for each of the following:
 - (a) When cow dung is used for the production of biogas, there is no need to add any inoculum into the biogas plant.
 - (b) α -interferons are administered to a cancer patient.
9. In an aquarium, two herbivorous species of fish are living together and feed on phytoplanktons. According to Gause's principle, one of the species is to be eliminated in due course of time, but both of them are surviving well in the aquarium.
 - (a) Mention the possible reason(s) for this coexistence.
 - (b) What name is given to such a phenomenon?
 - (c) Name the scientist who showed it.

14. (a) Persons with Down's syndrome and those with Klinefelter's syndrome have 47 chromosomes each; but they show many differences. Bring out the differences between the two disorders.
- (b) What is the common cause for such disorders?
15. (a) Construct a pyramid of biomass in an aquatic ecosystem.
- (b) Apart from plants and animals, microbes also form the biotic components of an ecosystem. While plants are called autotrophs or producers, animals are called heterotrophs or consumers.
- (i) How can you refer to the microbes?
- (ii) How do microbes fulfill their energy requirements?
16. (a) You know many proteases are secreted in their inactive forms in our body. This is also true of some toxic proteins produced by certain microbes. Explain how this mechanism is functioning with an example.
- (b) Why are restriction enzymes found only in bacteria and not in eukaryotes?
17. Describe the different regions of fallopian tube through which a secondary oocyte travels, till it gets fertilised.
18. (a) Write the hypothetical proposals made by Oparin and Haldane, on the origin of life.
- (b) S.L. Miller performed an experiment to show the chemical origin of life, by recreating in the laboratory, the conditions of the primitive earth. Mention three such conditions of the primitive earth recreated and the products formed in this experiment.
19. Choose any three microbes from the following list, from which bioactive molecules are obtained. Name the bioactive molecules and their medical applications:
- Monascus, Anabaena, Trichoderma polysporum, Spirulina, Streptococcus.*
20. (a) How is the 'z' gene of *E.coli* used as a selectable marker in recombinant DNA technology?
- (b) How can the DNA segments separated by gel electrophoresis be visualised later?

