



INDIAN SCHOOL SOHAR
SECOND TERM EXAMINATION-2016
BIOLOGY

STD XII
30.11.16

Marks:70
Time:3Hrs

General Instructions:-

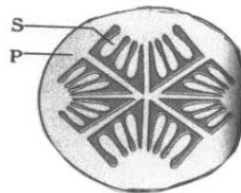
- (i) This question paper consists of five sections **A, B, C, D and E**. Section **A** contains **5** questions of **1** mark each, section **B** is of **5** questions of **2** marks each, section **C** is of **12** questions of **3** marks each, Section **D** contains **1** question of **4** marks and section **E** is of **3** questions of **5** marks each.
- (ii) All questions are compulsory.
- (iii) There is no overall choice. However, an internal choice is provided in one question of **2** marks, one question of **3** marks and all questions of **5** marks weightage. Attempt only **one** of the choices in such questions.
- (iv) Questions of section **A** are to be answered in one word or one sentence each, section **B** in approximately 20-30 words each, section **C** in 30-50 words each and section **D** in 30-40 words and section **E** in 80-120 words each.
- (v) Wherever necessary, the diagrams drawn should be neat and properly labeled.

SECTION-A

1. What is the relationship between the number of chromosomes of meiocytes and gamete formation? (1)
2. List the two major approaches in the sequencing of the genome. (1)
3. Mention the strategy used to increase homozygosity in cattle. Give one advantage. (1)
4. Why are plasmids and bacteriophages used as cloning vectors in E.coli? (1)
5. Mention the two functions of the codon, AUG. (1)

SECTION-B

6. (a) Name the floral parts that develop into 'S' and 'P' in the given figure. (2)
- (b) Give the function of the part labeled 'S' and 'P'.



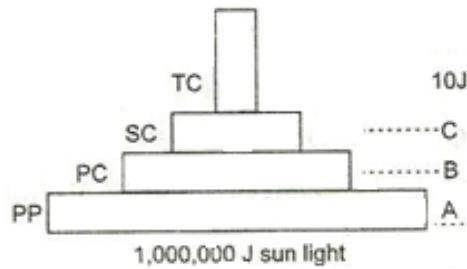
7. Baculoviruses and ladybird are excellent candidates for integrated pest management in an ecologically sensitive area. Explain giving reasons. (2)

OR

IARI has released several varieties of crops plants that are biofortified. Define biofortification. Give two examples of such crops and their biofortification.

8. Evolution is not a direct process, but a stochastic process, based on chance events in nature. Justify. (2)
9. How is a bacterial cell made 'competent' to take up the DNA which cannot pass through the cell membranes? (2)

10. Study the given figure and answer the following: (2)



- (a) What is the amount of energy available at A, B and C?
- (b) Pyramid of energy is always upright. Give reason.

SECTION-C

11. (a) Draw a neat labelled diagram showing the human foetus within the uterus. (3)
 (b) Placenta acts as an endocrine tissue. Justify.

12. Natural selection is a process in which heritable variations enable better survival of organisms (3) to reproduce and leave greater number of progeny. Describe how natural selection operates on different traits in a population?

13. Explain briefly the different steps involved in the construction of recombinant DNA. (3)

OR

Represent only diagrammatically the steps in the formation of rDNA using the restriction enzymes EcoRI.

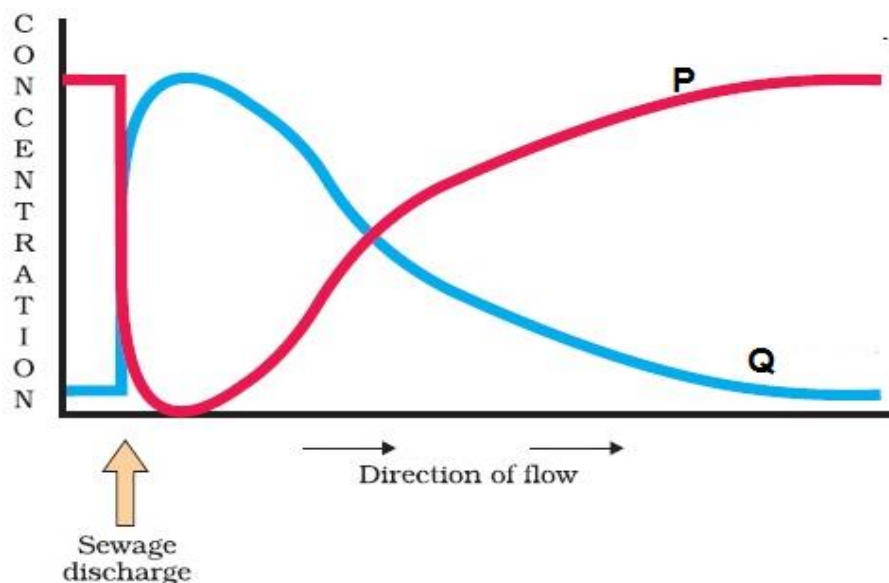
- 14. (a) If the frequency of a parental form of a traits higher than 25% in a dihybrid test cross, what (3) does that indicate about the two genes involved?
- (b) How many types of gametes can be formed by an individual organism that is heterozygous for four loci?
- (c) Recently a girl baby has been reported to be suffering from haemophilia. Explain this with the help of a cross.
- 15. (a) What is the cause of adenosine deaminase deficiency in a person? What is the importance (3) of this enzyme?
- (b) Why is it that there is no permanent cure for ADA?

16. Complete the blanks 'a' to 'f' in the given table. (3)

Organism	Bioactive Molecule	Application
a) -----	Cyclosporin A	b) -----
<i>Monascus purpureus</i>	c) -----	d) -----
e) -----	Streptokinase	f) -----

- 17. (a) Ecological succession tends to progress from unstable biotic community to stable biotic (3) community. Trace the succession of plants in a water body.
- (b) Secondary succession is faster than primary succession. Give reason.
- 18. How does activated sludge get produced during sewage treatment? How is this sludge (3) used?
- 19. Amazonian rain forest has the greatest biodiversity on earth. List the hypothesis proposed (3) by ecologists to account for the enormous biological biodiversity.

20. The below graph shows the effect of sewage discharge on some important characteristics of a river. (3)



- (a) Label 'P' and 'Q' in the given figure.
 (b) Explain the relationship between 'P' and 'Q'?
21. AB and CD represents two strands of DNA molecule. When this molecule undergoes replication, it forms a replication fork between A and C. (3)



- (a) Using which strand as template, will there be continuous synthesis of the complementary strand.
 (b) Name the enzymes that are required as catalysts, mention their role during DNA replication.
 (c) Why are both the strands of DNA not copied during transcription?
22. (a) How do cellular barriers and cytokine barriers provide innate immunity in humans? (3)
 (b) Cancer patients given substances called biological response modifiers. Justify.

SECTION-D

23. 'The idea of rays penetrating a damaged "shield" meshes nicely with abiding and resonant cultural motifs, including "Hollywood affinities." These range from the shields on the Starship Enterprise to Star Wars ... It is these pre-scientific bridging metaphors built around the penetration of a deteriorating shield that render the ozone problem relatively simple. That the ozone threat can be linked with Darth Vader means that it is encompassed in common sense understandings that are deeply ingrained and widely shared' (4)
- (a) List two human activities leading to the above state.
 (b) What is the significance of the ozone shield?
 (c) Enumerate two expected effects of these human activities.
 (d) As individuals, mention two steps that you would take to minimize this, in order to ensure the well-being of our future generations.

SECTION-E

24. (a) Trace the development of a zygote of a dicot angiosperm into a fully-developed embryo along with diagrams. (5)
- (b) Differentiate between geitonogamy and xenogamy.

OR

- (a) The meiotic division that occurs during oogenesis is different from that of spermatogenesis. Explain.
- (b) Describe two ways by which fertilization of human ovum by a sperm can be prevented.
25. (a) Explain the process of aminoacylation of tRNA. Mention its role in translation. (5)
- (b) Describe 'initiation' and 'termination' phases of protein synthesis.
- (c) What are untranslated regions? Give its significance.

OR

- (a) How did Hershey and Chase differentiate between DNA and protein in their experiment while proving that DNA is the genetic material?
- (b) Give two chemical differences between DNA and RNA.
- (c) Transcription and translation can be coupled in bacteria. Justify.
26. (a) Outline the salient features of Carbon cycling in an ecosystem. (5)
- (b) Suggest two deleterious effects of the following human activities on man and his environment.
- (i) Agro-chemicals to the aquatic system (ii) Deforestation.

OR

- (a) The accelerated rates of species extinctions that the world is facing now are largely due to human activities. Explain, the four major causes of biodiversity losses citing examples.
- (b) A particular species of wild cat is endangered. In order to save them from extinction, which is a desirable approach *in situ* or *ex situ*? Justify your answer and give one difference between the two approaches.

*****THE END*****