



INDIAN SCHOOL SOHAR
FIRST TERM EXAM-2017
BIOLOGY

26.09.17
STD XII

Marks:70
Time:3Hrs

General Instructions:-

- This question paper consists of five sections **A, B, C, D&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 and section **D** is **1** questions of **4** marks and section **E** is of **3** questions of **5** marks each.
- All questions are compulsory.
- 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.
- 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 **80-100** words each and section **E** in **80-120** words each.
- Wherever necessary, the diagrams drawn should be neat and properly labeled.

SECTION-A

1. State Hardy-Weinbergs equilibrium. (1)
2. Meiosis is an essential event in the sexual life cycle of any organism. Give reason. (1)
3. Write the hypothetical proposals put forward by Oparin and Haldane. (1)
4. Bottled juices are clearer as compared to those made at home. Justify (1)
5. Can cross pollination occur in cleistogamous flowers? Give reason. (1)

SECTION-B

6. Suggest two advantages to a farmer for using apomictic seeds. (2)
7. (a) If the frequency of a parental form of trait is higher than 25% in a dihybrid test cross, what does that indicate about the two genes involved? (2)
- (b) How many types of gametes can be produced by a diploid organism that is heterozygous for 4 loci?
8. Convergent evolution and divergent evolution are the two concepts explaining organic evolution. Differentiate between each one with an example. (2)

OR

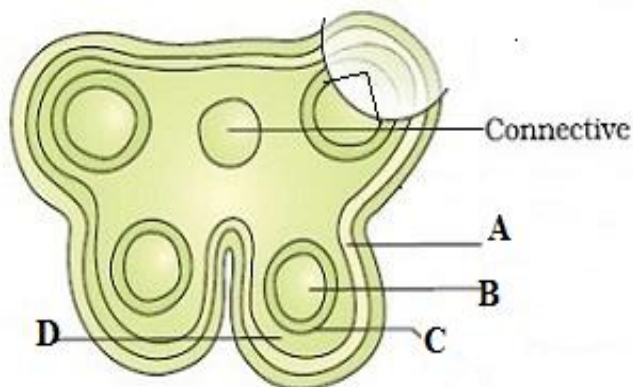
How is Hugo-de-Vries concept of evolution different from that of Darwin?

9. Wind pollination is quite common among abiotic pollinations. List four characteristic features of wind pollinated flowers. (2)
10. (a) Fill in the gaps from A to D in the given table. (2)

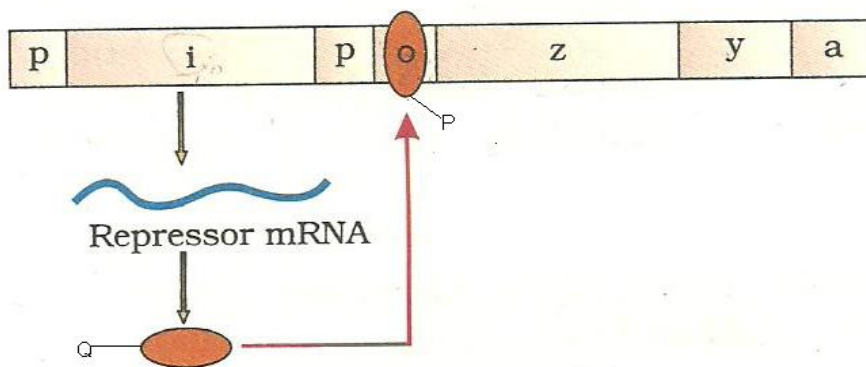
Disease	Causative agent	Symptom
A) -----	<i>Entamoeba histolytica</i>	B) -----
Typhoid	C) -----	Sustained high fever, weakness, loss of appetite.
Filariasis	D) -----	Chronic inflammation of lymphatic vessels.

SECTION-C

11. Draw a schematic representation showing the different stages of oogenesis in the human ovary. (3)
12. (a) A large number of infertile couples could be assisted to have children through special techniques. How are these done by embryo transfer. (3)
- (b) Justify the statutory ban on amniocentesis. (3)
13. Given below is the figure showing the T.S of a young anther label the parts marked A to D and mention the role played by B and C during microsporogenesis. (3)



14. In *Antirrhinum* a plant with red flowers was crossed with a plant with white flowers. Work out all the possible phenotypes and genotypes of F₁ and F₂ generations. Comment on the pattern of inheritance this case. (3)
15. (a) Name the kind of diseases/disorders that are likely to occur in humans if: (3)
- (i) mutation in the gene that codes for an enzyme phenyl alanine hydrolase occurs.
- (ii) there is trisomy of chromosome number 21,
- (iii) the karyotype is 45XO.
- (b) Mention any two symptoms shown by the above diseases/disorders.
16. Given below is a schematic representation of the lac Operon. (3)

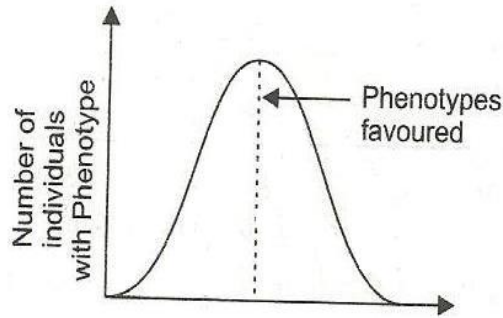


- (a) Name the parts labeled 'P' and 'Q' produced by the 'i' gene.
- (b) Explain, the mechanism involved in the Operon concept when the operator switch is 'on'.
17. DNA fingerprinting is a quick way to compare the DNA sequences of any two individuals. Enumerate the steps involved in DNA fingerprinting analysis. (3)

OR

- (a) The length of a DNA is far greater than the dimension of a typical nucleus. How is such a long polymer packaged in a cell?
- (b) Why is DNA considered a better genetic material than RNA?

18. (a) Given below is the sequence of the nucleotides on the mRNA segment and the amino acid sequence in the polypeptide chain. (3)
- 5'- AUGUUUAUGCCUGUUUAA-3', Polypeptide: 'X'-phe-met-proline-serine-'Y'
- (i) Write the nucleotide sequence of the DNA from which this mRNA was transcribed.
- (ii) What does the first(X) and the last codon(Y) on the mRNA stand for?
- (b) How does a degenerate code differ from an unambiguous one?
19. The given graph represents the operation of natural selection favoring medium sized individuals. (3)



- (a) Which type of natural selection would operate if :
- (i) two peaks are formed (ii) the peak gets narrow and higher.
- (b) What could be the likely reasons of new variations arising in the population?
20. The sewage is treated in STPs before it is discharged into natural water bodies. How is biological treatment of sewage carried out? (3)
21. Name the microbe from which the following products are obtained and mention their role in human welfare. (a) Cyclosporin A, (b) Statins, (c) Streptokinase. (3)
22. MOET is considered to be a successful programme in cattle breeding. List the steps involved and two advantages of the above technique. (3)

SECTION-D

23. Adolescence is a stage linking childhood and adulthood. It is accompanied by several biological and behavioural changes. It is thus, a very vulnerable phase of mental and psychological development of an individual. Of late drug and alcohol abuse is becoming a common concern among youth adolescents. (4)
- (a) Mention the causes that motivate youngsters towards drugs and alcohol abuse
- (b) What are the most common warning signs of drug and alcohol abuse seen among youth?
- (c) Suggest any four measures that could be useful for prevention and control of drug and alcohol abuse among adolescents.

SECTION-E

24. (a) What are introns and exons?
- (b) Depict, the process of copying genetic information from one strand of DNA into RNA in bacteria with a schematic diagram. (5)

OR

DNA separated from one cell, when introduced in another cell is able to bestow some of the properties of the latter.

- (a) Describe the experimental evidences which led to the discovery of the above phenomenon. Give the technical term for the above change.
- (b) Who characterized the biochemical nature of the above principle?

25. A Thallemic child needed repeated blood transfusions got infected by HIV. (5)
- (a) Use a diagrammatic sketch to show how the virus increased in number.
 - (b) Why did the increased number deteriorate the child's immunity?

OR

Plant breeding programmes are carried out in a systematic way worldwide.

- (a) List the main steps in breeding a new genetic variety of a crop.
- (b) Explain how the following microbes act as biocontrol agents?

(i) *Bacillus thuringensis* (ii) *Nucleopolyhedrovirus*.

26. Trace the development of the endosperm and the embryo after syngamy in a dicot plant with neat diagrams. (5)

OR

A sperm has just fertilized a human egg in the fallopian tube. Trace the events that the fertilized egg will undergo up to implantation of the blastocyst in the uterus. Mention the role played by the placenta.

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