



V & C Patel English School  
Half Yearly Examination

Std.:XII

Subject: Biology

Max Marks: 70

Date: 20/09/2017

Time: 3 hrs.

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**General instructions:**

- (1) All questions are compulsory.
- (2) The question paper consists of five sections.  
Section A - 5 questions of one mark each  
Section B - 5 questions of two marks each  
Section C - 12 questions of three marks each  
Section D - 1 question of 4 mark  
Section E - 3 questions of 5 marks each
- (3) There is no overall choice. However an internal option has been provided in one question of 2 marks, one question of 3 marks and all the three questions of 5 marks weightage. A student has to attempt only one of the alternatives in such question.
- (4) Wherever necessary, diagrams drawn should be neat and properly labeled.

**SECTION - A**

- Q-1 What stimulates the pituitary to release the hormone responsible for parturition? Name the hormone.
- Q-2 Mention two events that are inhibited by the intake of oral contraceptive pills to prevent pregnancy in humans.
- Q-3 State the significance of *Coelacanth* evolutionary history of vertebrates.
- Q-4 Mention the type of evolution that has brought the similarity as seen in potato tuber and sweet potato.
- Q-5 Mention the two concepts of Darwinism.

**SECTION - B**

- Q-6 Name the unit of vegetative propagation in water hyacinth. Explain giving reasons why it has become the most invasive aquatic weed.
- Q-7 A cross between a red flower – bearing plant and a white – flower bearing plant of *Antirrhinum* produced all plants having pink flowers. Work out a cross to explain how this is possible.



Q-8 In a Dihybrid cross, white – eyed, yellow bodied female *Drosophila* crossed with red – eyed, brown – bodied male *Drosophila* produced in F<sub>2</sub> generation, 1.3 per cent recombinants and 98.7 percent progeny with parental type combinations. This observation of Morgan deviated from Mendelism F<sub>2</sub> phenotypic Dihybrid ratio. Explain giving reasons Morgan's observations.

Q-9 Mention the possible levels of regulation of gene expression in eukaryotes.

Q-10 Expand VNTR. How is it different from 'probe'?

OR

Is sex education necessary in schools? If so why?

#### SECTION – C

Q-11 (1) In the whiptail lizard, only females are borne generations after generations. There are no males. How is it possible?

(2) Why do intermodal segments of sugarcane fail to propagate vegetative even when they are in contact with damp soil?

(3) Why is the offspring formed by asexual reproduction referred to as clone?

Q-12 In an angiosperm, the embryo sac is haploid, zygote is diploid and endosperm is triploid. Justify giving reasons for each stage.

Q-13 (1) Mention any four strategies adopted by flowering plants to prevent self- pollination.

(2) Why is geitonogamy also referred to as autogamy?

Q-14 Draw a transverse sectional view of an apple and label the following parts along with their technical terms.

(1) Edible part                      (2) Encloses the embryo                      (3) Forms fruit wall

Q-15 State the significance of pollination. List any four differences between wind pollinated and animal pollinated flowers.

Q-16 (1) Draw a diagram of the structure of a human ovum surrounded by corona radiata. Label the following parts: Ovum, plasma membrane, zona pellucida

(2) State the function of zona pellucida.

Q-17 Mention the target cells of luteinizing hormone in human males and females. Explain the effect and the changes which the hormone induces in each case.



- Q-18 Name the genetic disorder caused by trisomy of 21<sup>st</sup> chromosome in humans. Write the diagnostic features of the disorder.
- Q-19 What is hnRNA? Explain the changes hnRNA undergoes during the processing to form mRNA.
- Q-20 With the help of any two suitable examples, explain the effect of anthropogenic actions on organic evolution.
- Q-21 How did Hardy – Weinberg explains that allelic frequencies in a population are stable and constant from generation to generation? Why does genetic equilibrium get disturbed in a population? Give reasons.
- Q-22 Darwin observed a variety of beaks in the small black birds inhabiting Galapagos Islands. Explain what conclusion did he draw and how.

OR

Sickle cell anemia in humans is a result of point mutation. Explain. Write the genotypes of both the parents who have produced a sickle celled anemic offspring.

#### SECTION – D

- Q-23 An infertile couple visits a doctor for a check – up. It was found that the man is having some problem, which is the reason that the for the couple not having a child. But he does not agree with the doctor and argues that he is healthy and only his wife is asthmatic and hence, she is not able to produce a child. Ultimately the doctor succeeded in convincing the man and the couple got ready for the treatment.
- (1) What are the possible causes of infertility in males?
  - (2) What are the possible methods available for this couple to have a child? Explain in detail.
  - (3) Indicate the values explicit in the action of the doctor.

#### SECTION – E

- Q-24 (1) Draw a labeled diagram of the microscopic structure of a human sperm. Explain the functions of each part.
- (2 )Give role of any two accessory glands in human male reproductive system.

OR

- (1) Draw a diagrammatic sectional view of human ovary showing different stages of oogenesis along with corpus luteum.
- (2) Where is morula formed in human? Explain the process of its development from zygote.



Q-25 (1) A true breeding pea plant homozygous for axial violet flowers is crossed with another pea plant with terminal white flowers. Work out the cross to show the phenotypes and genotypes of  $F_1$  and  $F_2$  generation along with the ratios.

(2) State the law that Mendel proposed on the basis of such cross.

OR

Differentiate between the following:

- (1) Polygenic inheritance and Pleiotropy
- (2) Dominance, Codominance and Incomplete dominance

Q-26 Describe the process of replication of DNA.

OR

- (1) One of the codon on mRNA is AUG. Draw the structure of tRNA adapter molecule for this codon.
- (2) Name the enzyme that transcribes tRNA in eukaryotes.
- (3) What is unique about the amino acid this tRNA binds with?
- (4) Name the structural components of transcription unit.
- (5) Explain the role of  $^{35}\text{S}$  and  $^{32}\text{P}$  in the experiments conducted by Hershey and Chase.