ST. XAVIER'S SENIOR SECONDARY SCHOOL, DELHI – 110 054

Std. 12 Time : 3 hrs.

8-9-2014 Half Yearly Examination in **BIOLOGY (Set - I)** M. Marks : 70

GENERAL INSTRUCTIONS :-

(i) All questions are compulsory.

(ii) The question paper consists of four sections A, B, C, D and E. Section A contains 5 questions of one mark each, Section B is of 5 questions of two marks each, Section C is of 12 questions of three marks each and Section D is of one question of 4 mark. E section has 3 questions of five marks each.

(iii) 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 the three questions of 5 marks weightage. A student has to attempt only one of the alternatives in such questions.

(iv) Wherever necessary, the diagrams drawn should be neat and properly labelled.

SECTION – A (5x1=5 marks)

1. Why do corn cobs have long tassels?

2. Mention the unique feature with respect to flowering and fruiting in bamboo species.

3. Mention the role of the codon AUG and UGA during protein synthesis.

4. Write down the possible genotypes Mendel got when he crossed F1 tall pea plant with A dwarf pea plant .

5. Where are MALT present in the human body and why?

SECTION – B (5x2=10 marks)

6. When we say "Survival of the fittest", does it mean that :
   a) those which are fit only survive, or (b) those that survive are called fit?

7. Why does the son of a carrier mother and a normal father suffer from haemophilia, where as son of a haemophilic father and a normal mother would not?

8. Draw a schematic diagram of LAC OPERON in it's switched off position and label the following:-
   i) The structural genes ii) Repressor bound to it's correct position
   iii) Promotor gene iv) Regultory gene

   (OR)

   What is meant by R-cells and S-cells with which Frederick Griffith carried out his experiments on Diplococcus pneumonia? What did he prove from these experiments?

9. Name the two special types of lymphocytes in humans .How do they differ in their roles in immune response?

10. Explain the changes fresh milk undergoes when a small amount of curd is added to it and kept at suitable temperature.

SECTION – C (12x3= 36 marks)

11. Draw a labelled L.S. of Pistil showing path of pollen tube entering the embryo sac.

    (OR)

    Diagrammatically represent the development of male gametophyte from a mature pollen.

12. What do you understand by the following terms :-
    i) Scutellum ii) Tapetum
    iii) Acrosome iv) Gestation Period
    v) H.I.V. vi) M.T.P.

13. Differentiate between the oestrous cycle and menstrual cycle.

14. Fed up of a large family , a couple wanted to adopt a terminal method of contraception. Describe the process conducted by the doctor in either of the cases – male/female partner.

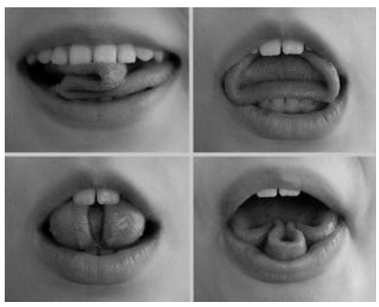
15. Why is ZIFT a boon to childless couples? Explain the procedure.

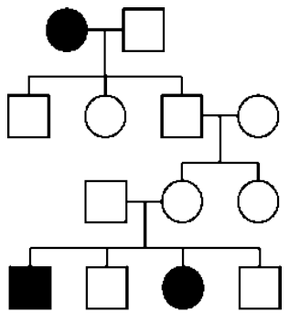
16. a) In a cross of parents that are pure for contrasting traits, only one form of the trait will appear in the next generation. Offspring that are hybrid for a trait will have only the dominant trait in the phenotype. Mention the phenotype for each cross :

Parent Pea Plants	F1 Pea Plants
tall stem x short stem	
yellow seeds x green seeds	
green pea pods x yellow pea pods	
round seeds x wrinkled seeds	
axial flowers x terminal flowers	
Purple flowers x white flowers	

b) Explain the conclusion of Mendel from the above results.

17. Read this pedigree of rolling tongue and explain the given diagram.





18. What do you understand with leading and lagging strand during D.N.A. replication?

19. a) List the uses of D.N.A. Fingerprinting.
b) Explain each labelled part briefly.

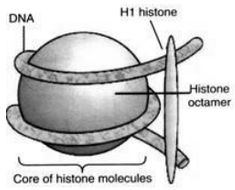


Image 4.4. Nucleosome

20. How does industrial melanism support Darwin's theory of natural selection?

21. Name the type of human cell HIV attacks on its entry into the body. Explain the events that occur in the cell which further lead to cause immunodeficiency syndrome.

22. Mention the various steps involved in of plant breeding .

SECTION – D (1x4=4 marks)

23. Municipal Corporation has deputed personnel to check for mosquito breeding in your school.
a) Which are the places they should check for mosquitoes and there larvae?
b) Name to diseases which are spread by mosquitoes.
c) Name any two biological agents which can be used to control mosquitoes
d) What are the various ways by which we protect ourselves against mosquitoes and why do we find mosquito eradication so difficult?

SECTION – E (3x5=15 marks)

24. How did Hershey and Chase prove that DNA is the hereditary material?
Explain their experiment with suitable diagrams.

(OR)

Inheritance pattern of flower colour in garden pea and Snapdragon differs. Why is the difference observed ? Explain showing the crosses upto F2 generation.

25. a) When and how does placenta develop in human female?
b) How is the placenta connected to the embryo?
c) Placenta acts as an endocrine tissue. Explain.

(OR)

a) Trace the development of embryo after syngamy in a dicot plant.
b) Endosperm development precedes embryo development. Explain.
c) Draw a diagram of a mature dicot embryo and label cotyledons, plumule, radicle and

26. a) Give a detailed account of sewage treatment procedure.
b) Draw the related diagram of it .

(OR)

Mention the various addictive substances and give in detail :-
i) Names of the substances ii) Impact on the body
iii) Reasons of addiction iv) Withdrawal symptoms
v) Treatment / Rehabilitation

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