



**General instructions:**

i) All questions are compulsory.

ii) This question paper consists of four sections A, B, C, and D. Section A contains 3 questions of one mark each, Section B is of 5 questions of two marks each, Section C is of 9 questions of three marks each and Section D is of 2 questions of five marks each.

iii) There is no overall choice. However, an internal choice has been provided in one question of two marks, one question of 3 marks and two questions of 5 marks each. A student should attempt only one of the alternatives in such questions.

iv) Wherever necessary, the diagram drawn should be neat and properly labeled.

**SECTION A**

1. Chromosome number in meiocytes of maize is 20. What is the number of chromosomes in maize gamete? (1)
2. How is it possible in Oxalis and Viola plants to produce assured seed-sets in the absence of pollinators?(1)
3. Mention the location and function of Leydig cells in humans. (1)

**SECTION B**

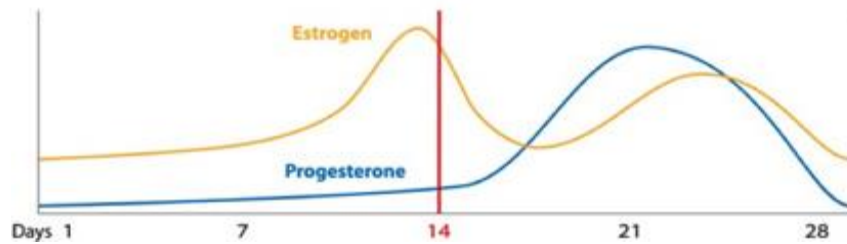
4. Name the product of fertilization that forms the kernel of coconut. How does the kernel differ from coconut water? (2)
5. Mention the function of each of the following: (2)
  - a) tassels of corn-cob
  - b) tapetum in the microsporangium
6. Classify the following plants into monoecious and dioecious: (2)

Papaya, Coconut, Cucurbits, Date palm
7. A non-haemophilic couple was informed by their doctor that there is possibility of a haemophilic child be born to them. Draw a checker board and find out the percentage of possibility of such child in the progeny. (2)
8. Scientifically it is correct to say that the sex of the baby is determined by the father, not by the mother. Justify the statement. (2)

**SECTION C**

9. a) What does amniocentesis test? On what basis does it work? Is it justified to put a statutory ban on this process?
  - b) Name any two STD's caused by virus. (3)

10.



Study the graph given above showing the levels of ovarian hormones during menstruation and correlate the uterine events that take place according to the hormonal levels on: (3)

(i) 6-15 days

(ii) 16-25 days

(iii) 26-28 days ( if the ovum is not fertilized)

11. Trace the development of pollen grain inside anther. Mention the significance of exine of pollen grain. (3)

12. Explain any three strategies developed by plants to prevent inbreeding depression. (3)

13. Represent the change of a base (point mutation) that causes sickle cell anaemia. Represent diagrammatically HbA and HbS polypeptides. (3)

14. a) A mother of one year old daughter wanted to space her second child. Her doctor suggested CuT. Explain its contraceptive action.

b) Expand ZIFT (3)

15. a) Why did Mendel select Garden Pea for his experiments?

b) Name the following:

i) A graphical representation to calculate the probability of all possible genotypes of offspring in a genetic cross.

ii) Study of family history about inheritance of a particular trait. (3)

16. If a true breeding homozygous pea plant with green pod and axial flower as dominant characters is crossed with a recessive homozygous pea plant with yellow pod and terminal flowers, then what would be the:

a) genotype of the two parents

b) phenotype and genotype of the  $F_1$  offspring

c) phenotypic distribution ratio in  $F_2$  population (3)

17. Draw a flow chart to show the hormonal regulation of reproduction in human male. (3)

## SECTION D

18. (a) Draw a labeled diagram of sectional view of human ovary showing different stages of oogenesis.

(b) Where is morula formed in humans? Draw a flow chart to explain the process of its development from zygote. (5)

**OR**

(a) Draw a sectional view of a typical anatropous ovule and label the parts.

(b) Mention the fate of all the components of the embryo sac after fertilization.

19. Inheritance patterns of flower colour in garden pea and snap dragon differs. Why is the difference observed? Explain the difference in their inheritance patterns with the help of crosses. (5)

**OR**

(a) Show diagrammatically the results of dihybrid cross carried out by T H Morgan to show linkage.

(b) Write two symptoms exhibited by Turner's syndrome sufferer. Explain the cause of the disorder.

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