



General Instructions:-

- This question paper consists of four sections **A, B, C & D**. Section **A** contains **5** questions of **1** mark each, section **B** is of **7** questions of **2** marks each, section **C** is of **7** questions of **3** marks each and section **D** is **2** questions of **5** marks each.
- All questions are compulsory.
- There is no overall choice. However, an internal choice is provided in one question of **1** mark, 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 **80-120** words each.
- Wherever necessary, the diagrams drawn should be neat and properly labeled.

SECTION-A

1. Why is autogamy discouraged in plants? 1
2. The chromosome number in the meiocyte of a maize plant is 20 chromosomes. Work out the number of chromosomes found in its endosperm and the gametes. 1
3. Medically it is advised to all young mothers that breast feeding is the best for their newborn babies. Comment. 1
4. List two characteristics of wind pollinated flowers. 1
5. Identify and define the cross that would help to find the genotype of a pea plant bearing violet flowers. 1

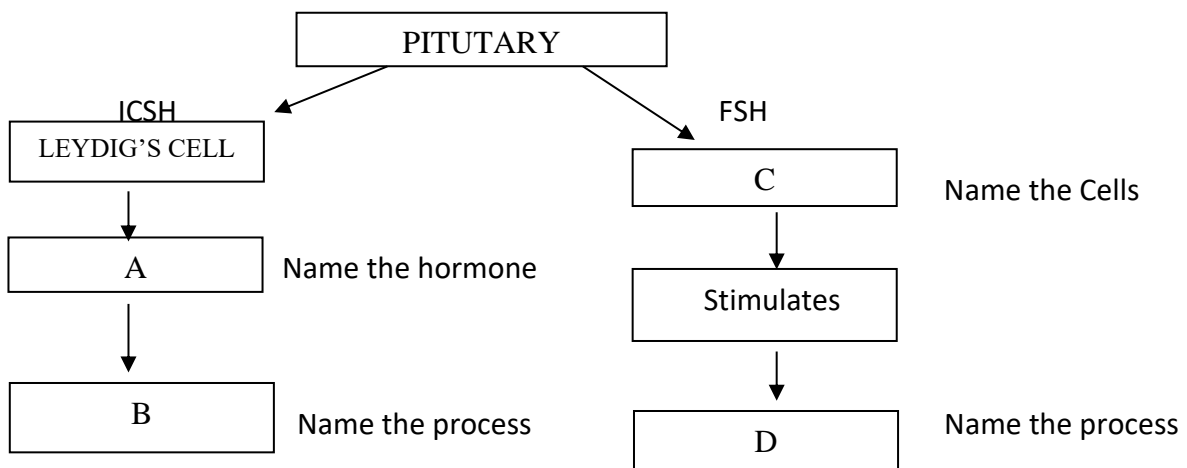
OR

Name the pattern of inheritance where F1 phenotype:

- a) resembles only one of the two parents.
- b) does not resemble either of the two parents and is in between the two.

SECTION-B

6. A wide range of contraceptive methods are now available. Describe any two mechanical methods of birth control, which help prevent unwanted pregnancy. 2
7. Given below is an incomplete chart showing influence of hormones on gametogenesis in males. Observe the flow chart carefully and fill in the blanks A, B, C and D. 2

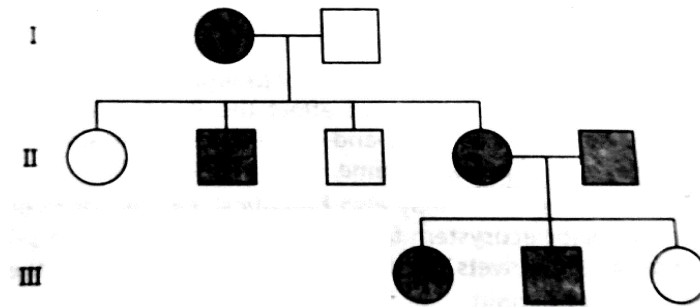


8. Apomixis is a form of asexual reproduction that mimics sexual reproduction. How can it be used commercially? 2
9. Write one advantage and one disadvantage of cleistogamy in flowers. 2
10. Name a disorder a human suffers from as a result of monosomy of the sex chromosome. Give the karyotype and write three symptoms. 2

OR

A colour blind man marries a woman with normal vision whose father was colour blind. Work out a cross to show the genotypes of the new couple and their prospective sons. 2

11. Study the pedigree chart given below and answer the questions that follow:

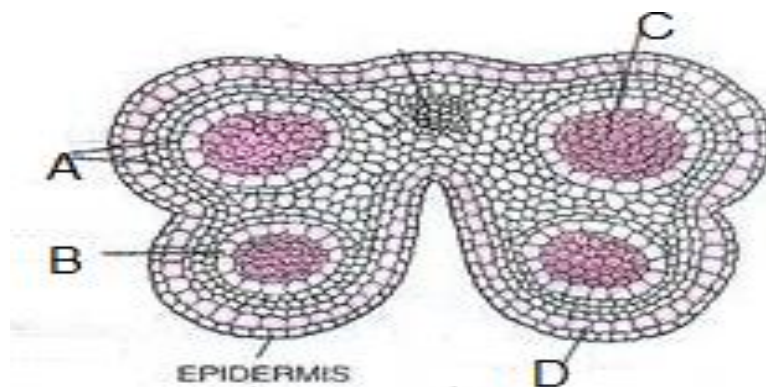


- a) Is the trait autosomal dominant, autosomal recessive or sex-linked? 2
- b) Write the genotypes of the parents in generation I. 2
- c) Give the genotype of the first child in generation II and that of the first and second child in generation III. 2
12. The table below gives certain techniques associated with ART's. Fill in the gaps. 2

ART's	Procedure
Intra uterine transfer	a)-----.
b)-----	Transfer of an ovum from a donor into the fallopian tube of another female who cannot produce one.

SECTION-C

13. Describe the process of oogenesis in a human female, along with a diagrammatic representation of the stages showing the number of chromosomes. 3
14. a) Mention the function of the structural and functional unit between foetus and maternal body. 3
 b) State from where the signals for parturition originate in human female and the role of hormones in parturition. 3
15. a) In the given figure showing the T.S of a young anther, label the parts marked A to D. 3
 b) What would happen if B is absent in the anther during microsporogenesis? 3



16. a) How is sex determined in insects like grasshopper?
 b) Amniocentesis, the foetal sex determination test is banned in our country. Is it necessary? Comment. 3
17. Mention three adaptations in plants to encourage xenogamy. 3
18. Draw a labelled diagram of the human ovum just released after ovulation. Why, not all copulations lead to fertilisation and pregnancy?

OR

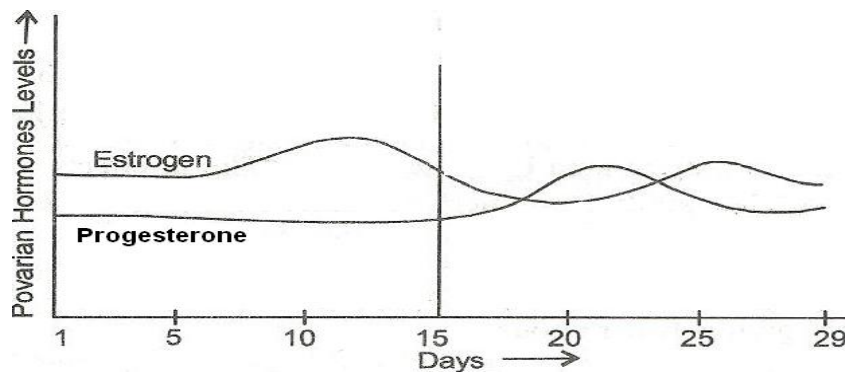
- Draw a neat diagram of a mature sperm and label any four parts and write the function of any two parts. 3
19. Name the type of disease or disorder and any two symptoms that are likely to occur in humans if:
 a) Mutation in the gene that codes for an enzyme phenylalanine hydroxylase occurs.
 b) The karyotype is XXY. 3

SECTION-D

20. a) Describe the process of megasporogenesis upto the formation of the fully developed female gametophyte in an angiosperm.
 b) Why is development of female gametophyte termed to be monosporic in majority of flowering plants?

OR

- a) Study the graph given below showing the level of ovarian hormones during menstruation and correlate the uterine and ovarian events that take place according to the hormonal levels.
 (i) 6 - 15 days (ii) 16– 25 days.



- b) How can the scientific understanding of the menstrual cycle of human females serve as a contraceptive measure? 5
21. a) How does incomplete dominance, co-dominance and pleiotropy deviate from Mendel's observation? Give an example each.
 b) Write the scientific name of the organism that Thomas Hunt Morgan had worked with for his experiments. Explain the correlation between linkage and recombination with respect to genes as studied by them.

OR

- a) In garden pea, a tall plant bearing purple flowers was crossed with a dwarf plant bearing white flowers. Work out all the possible genotypes and phenotypes of F_1 and F_2 generations.
 b) Comment on the pattern of inheritance in this cross. 5
