

GENERAL INSTRUCTIONS :-

- i) All questions are compulsory.
- This question paper consists of five 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 has 1 question of 4 marks and Section E is of 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 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 (1x5=5 marks)

- 1. What is the genetic cause of Turner's syndrome?
- 2. What is the role of nonsense or stop codons in protein synthesis?
- 3. Give the technical term for foetal sex determination test based on the chromosomal pattern in the amniotic fluid surrounding the developing embryo.
- 4. Why is gene encoding for 'cry' protein inserted into a crop plant?
- 5. Name the organism from which Ti plasmid is isolated.

SECTION – B (2x5=10 marks)

- 6. What is the role of lysing enzyme in Biotechnology?
- 7. Why is C.N.G. better than diesel in automobiles?
- Draw a labelled diagram of any one of the following :-Human Sperm (OR) Male gametophyte of angiosperms.
- 9. What is meant by Biotic potential?
- 10. Explain any two methods of ART that has helped childless couples to bear children.

SECTION – C (3x12=36 marks)

- 11. Write down the function of each of the following:
 - a) Middle piece in human sperm
 - b) Luteinising hormone in human male
 - c) Acrosomal enzymes
- 12. a) Mention any four strategies adopted by flowering plants to prevent self pollination.
 - b) Why is Geitonogamy also referred to as genetical autogamy?
- 13. a) Explain and draw a cross. Can a child have blood group O if his parents have blood group A and B.
 - b) Name the individuals having following chromosomal abnormalities.
 - i) Trisomy of 21st chromosomes ii) XXY iii) XO
- 14. In s pea plant, smooth seed coat is dominant over wrinkled seed coat. What will be expected ratio of phenotypes of the offsprings in a cross between
 - a) Heteorzygous smooth x Heteorzygous smooth.
 - b) Heteorzygous smooth x Homozygous wrinkled.
 - c) Heteorzygous smooth x Homozygous smooth.
- 15. Illustrate schematically the process of initiation, elongation and termination during transcription of a gene in a bacterium.
- 16. a) To which product, following products are related
 - i) Blue revolution ii) White revolution iii) Green revolution
 b) Observe the process of Somatic hybridisation given below and fill in the

blanks. (i), (ii), (iii) and (iv)		
TOMATO CELL	х	POTATO CELL	
CELL WALL DOGESTING ENZYMES			
(i)			
FUSION			
NAM	E OF THE PRO	CESS	

(ii)

NAME OF THE PLANTS

(iii)..... TERM USED TO DENOTE SUCH PLANT

(iv).....

- 17. What are Cannabinoids? From which plant Cannabinoids are obtained? Which part of the body is affected by consuming these substances?
- 18. Trace the life cycle of malarial parasite in the human body when bitten by an infected female anopheles. (Diagrams only)
- 19. Describe any three methods to overcome inbreeding depression in animal husbandry.
- 20. Mark the statement True OR False :
 - i) Exonucleases remove nucleotides from the ends of the D.N.A.
 - ii) D.N.A. fragments are negatively charged molecules.
 - iii) Microparticles of gold and tungsten coated with D.N.A. are used in a method called microinjection.
 - iv) Enzyme lysozyme is used to break the plant cell.
 - v) A protein encoding gene expressed in a heterologous host is called a recombinant protein.
 - vi) Plasmids are chromosomal double strandard, D.N.A. molecules of plant cells.
- 21. How is the Bt cotton plant created as a GM plant? How is it protected against bollworm infection?
- 22. a) Differentiate between food chain and food web.
 - b) Construct labelled grazing and detritus food chains with minimum 3 trophic levels each.

SECTION – D (4x1=4 marks)

- 23. A team of research workers observed that the population of fish eating birds is declining every year after the establishment of a pesticide factory nearby five years ago.
 - a) What may be the possible reason in your opinion? Explain?
 - b) Can you suggest alternative to pesticide so that factory may be stopped.

SECTION - E (5x3=15 marks)

- 24. Answer the following with respect to Cancer.
 - a) How does a cancerous cell differ from a normal cell?
 - b) Benign tumor is less dangerous than malignant tumor. Why?
 - c) Describe causes of cancer.
 - d) Mention two methods of treatment of the disease.
 - (OR)

The immune system of a person is supressed. He was found positive for a pathogen in the diagnostic test ELISA.

- a) Name the disease, the patient is suffering from.
- b) Which pathogen is identified by ELISA test?
- c) Which cells of the body are attacked by the pathogen?
- d) Suggest preventive measure of the infection.
- 25. a) Draw well labelled diagram of mature female gametophyte of an angiosperm.
 - b) Make a list of post fertilization changes that occurs in the angiosperms.
 - c) How is apomixis different from parthenocarpy?

(OR)

- a) Where are corpus luteum and corpus albicans present? Do they have any specific function?
- b) Draw a well labelled diagram of mature graafian follicle.
- c) Describe the endocrine functions of human placenta.
- 26. a) Write what DNA replication refers to.
 - b) State the properties of DNA replication model.
 - c) List any three enzymes involved in the process along with their functions.

(OR)

Inheritance patterns of flower colour in garden pea plant and snap dragon differ. Why is the difference observed? Explain the difference with the help of crosses in their inheritance patterns.

-X-X-X-X-X-X-