

GENERAL INSTRUCTIONS :-

- i) All questions are compulsory.
- ii) 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-