

PE-266
(542) M.Sc. Botany (Second Semester)
Examination June 2022
Compulsory/Optional
CYTOLOGY, GENETICS
Paper-I

Time: Three Hours

Maximum Marks: 080
Minimum Passing Marks:

नोट: दोनों खण्डों से निर्देशानुसार उत्तर दीजिए। प्रश्नों के अंक उनके दाहिनी ओर अंकित हैं।

Note: Answer from both section as directed. The figures in the right-hand margin indicate marks.

SECTION-A

1. Answer the following objective type questions- [1 X 10 = 10]
- (a) The least level of chromosome organization is _____.
(i) 30nm fibre (ii) Soleniod (iii) Nucleosome (iv) None of the above.
- (b) Cenmomic DNA was initially defined in _____.
(i) Bacteria (ii) Fungi (iii) Yeast (iv) Human
- (c) Which cell organelle is present in both prokaryotic cells _____.
(i) Mitochondria (ii) Endoplasmic reticulum (iii) Nucleus (iv) Ribosomes
- (d) Expression of gene is controlled in eukaryotes
(i) at one place in the nucleus (ii) at many places in the Nucleus
(iii) at many places in the cell (iv) Cannot be controiled at all
- (e) The sequence of structural gene in Lac Operon _____.
(i) Lac A, Lac y, Lac Z (ii) Lac A, Lac Z, Lac y
(iii) Lac y, Lac Z, Lac A (iv) Lac Z, Lac y, Lac A
- (f) Crossing over takes place in the _____.
(i) Diakinesis Stage (ii) Anaphase Stsage (iii) Pactytene Stage (iv) Leptotone Stages
- (g) Number of Linkage groups in pisum sativum is _____.
(i) 2 (ii) 5 (iii) 7 (iv) 9
- (h) Rearrangment of DNA is known as _____.
(i) Replication (ii) Trans Cription (iii) Recombination (iv) None of these
- (i) What is Cytogenetics?
(i) Genetics Disorders (ii) Phenompic Variation
(iii) Study of Chromosomes (iv) Qualitative Traits
- (j) Which of the following chromosomal aberration shows pseudo dominance _____.
(i) Deletion (ii) Duplication (iii) Inversions (iv) Translocation

SECTION-B

2. Write in brief about the following- [2 X 5 = 10]
- (a) What are -B Chromosome.
- (b) Genetic Fine Structure.
- (c) Crossing Orer.
- (d) Micro Cloning.
- (e) Describe Inversion.

SECTION-C

Answer the following questions in detail-

[15 X 4 = 60]

3. Explain the Ultra-structure of the nuclear pore with suitable diagram. Explain the mechanism of the trafficking of nuclear molecules and compounds between nucleus and cytoplasm.

Or,

Write the short note on the following-

- (I) Sex Chromosomes
- (II) Duplication
- (III) Evolution of Major Crop Plants

4. Write a detail account on Gene Expression in Prokaryotes.

Or,

Comment on the following-

- (I) Genetic Transformation.
- (II) Recombination
- (III) Mapping the bacteriophage Genome.

5. Explain the Molecular basis of Genemutation.

Or,

Write notes on the following-

- (I) Site Specific Recombination
- (II) Proto-Oncogene

6. Write about concept and technique in situ Hybridization.

Or,

Write notes on the following (any 2).

- (I) B-A Translocation.
- (II) C-Value Paradox.
- (III) Transfer of Whole genome.