

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)
MSc DEGREE EXAMINATION MAY 2023
(Second Semester)

Branch – **BIOCHEMISTRY**
MOLECULAR GENETICS

Time: Three Hours

Maximum: 50 Marks

SECTION-A (5 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** marks (5 x 1 = 5)

- 1 Applications of Cot curve analysis is to understand the following except
 - (i) genome size and complexity
 - (ii) complexity of sequences
 - (iii) relative proportion of single copy and repetitive sequences
 - (iv) repetitive sequences of eukaryote DNA
- 2 Synapsis begins when each sister chromatid pair condenses around a structure called
 - (i) Central element
 - (ii) Lateral element
 - (iii) Axial element
 - (iv) Synaptonemal complex
- 3 The Zinc finger structure maintained by the zinc ion co-ordinates with amino acids.
 - (i) Cysteine & Histidine
 - (ii) Lysine & Valine
 - (iii) Histidine & Proline
 - (iv) Cysteine & Proline
- 4 The homeobox is a sequence that codes for a domain of
 - (i) 25 amino acids
 - (ii) 35 amino acids
 - (iii) 60 amino acids
 - (iv) 20 amino acids
- 5 Human physical traits, a kind of inheritance which is produced from cumulative effect of genes called as _____.
 - (i) monogenic inheritance
 - (ii) polygenic inheritance
 - (iii) phenotype inheritance
 - (iv) i, ii & iii [all of the above]

SECTION - B (15 Marks)

Answer **ALL** Questions

ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

- 6 a) Write a note about PLEIOTROPHISM with suitable genetic diseases.
OR
b) Differentiate multiple allele and Pseudo allele.
- 7 a) What is mismatch repair? Write about its target and highlight its significance.
OR
b) Signify endosymbiosis in eukaryote gene evolution.
- 8 a) Brief on the structure and importance of Zinc finger protein.
OR
b) Brief on viral genome expression with a neat relevant sketch.
- 9 a) Write a note on heat shock protein chaperon functions.
OR
b) Explain briefly DNA binding domains and specify any two phenotypic significance.
- 10 a) Write a note on Progeria syndrome.
OR
b) Briefly mention diagnosis resistance gene sequences.

Cont...

SECTION -C (30 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 x 6 = 30)

- 11 a) What is Transposons? Write a note on bacterial transposons.
OR
b) Narrate with a neat sketch how site generated mutagenesis occurs.
- 12 a) Classify and signify the types of plastid genome.
OR
b) Discuss about mitochondrial genome.
- 13 a) Explain briefly the molecular aspects of binding techniques.
OR
b) Narrate briefly history of drug discovery for HIV.
- 14 a) Explain with two example how steroid hormone genes are expressed.
OR
b) Write short note on the following:
i) NF-Kb ii) c-Jun
- 15 a) Explain Mendelian principle in Co-Dominance and gene interactions.
OR
b) Detail how Somatic Cell Hybrids supports gene mapping.

Z-Z-Z

END