

[THIS Q PAPER CONSISTS OF TWO PAGES]

Roll No: _____

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BSc (Hons)/ (Hons with Research) Biochemistry
Examination: Semester III Examination, 2024

Paper Code: BBC MIC 301

Paper Title: Genetics

Max Marks: 60

Time: 2½ h

Note: This paper has 3 Sections, A, B, and C. Attempt all three sections. Section A: Answer all the questions; Section B: Answer any two; Section C: Answer all the questions, each question in this section has an internal choice

Abbreviations: CLO: Course Learning Outcome, PLO: Program Learning Outcome, BTL: Blooms Taxonomy (BT) Level: BT Level 1 - Remember, BT Level 2 - Understand, BT Level 3 - Apply, BT Level 4 - Analyse, BT Level 5 - Evaluate, BT Level 6- Create.

SECTION A

OBJECTIVE TYPE QUESTION

Attempt All Questions

(1x12=12 Marks)

Q. No.		BTL	CLO	PLO
1 (a)	Answer the followings as directed.			
i.	What are the microsatellites?	1	2	2
ii.	Sate methods for determining homozygosity and heterozygosity of an individual.	2	4	2
iii.	Enlist three genetic markers used in mapping.	3	3	4
iv.	Outline methods used for gene mapping in bacteria.	4	3	3
v.	Enumerate two applications of pedigree analysis.	5	2	2
vi.	Elaborate principles and types of QTL.	6	2	1
vii.	Holandric genes are located on chromosome.	5	2	3
viii.	Distinguish between gene and allele.	4	1	1
ix.	Compare between somatic and germinal mutations.	3	1	2
x.	What phenomenon is described by T. A. Morgan?	2	2	4
xi.	Define phenocopy using an example.	1	4	3
xii.	 is used to fuse the cells in somatic cell hybridization.	2	5	3

SECTION B

LONG ANSWER QUESTIONS
Attempt Any TWO Questions
(12x2=24 Marks)

Q. No.		BTL	CLO	PLO
2	Describe in details			
a)	Explain different types of gene interactions. Give examples of epistasis, pleiotropy and co-dominance and explain their effects.	1	5	2
b)	Using suitable example discuss how non-nuclear DNA is inherited and what is its effect?	4	5	3
c)	Explain the Hardy Weinberg Principle? Elaborate the applications of Hardy Weinberg Law.	2	1	5
d)	What are the different types of mutations in coding and non-coding sequences of DNA and what are their consequences?	4	3	2

SECTION C

SHORT ANSWER QUESTIONS
Attempt All Questions
(4x6=24 Marks)

Q. No.		BTL	CLO	PLO
3	Answer the following questions in brief			
a)	Contrast between sex limited and sex influenced characters. OR Distinguish between Homologous and non-homologous recombination.	4	2	2
b)	Elaborate Methods of gene transfer in bacteria. OR What is a linkage map? How linkage analysis is carried out?	5	2	3
c)	If there are 10 individuals of AA, 12 individuals of Aa, and 4 individuals of aa, what is the allelic frequency of A? OR What is karyotyping? How does it helps in disease detection?	6	3	2
d)	Define heritability. How it is calculated? OR Explain neutral theory of molecular evolution.	2	2	2
e)	Discuss factors that effects human phenotypic expressions. OR Discuss somatic cell hybridization and use of HAT medium?	2	4	1
f)	What are the advantages of tetrad analysis? Enlist species in which tetrad analysis can be done. OR Briefly discuss about the law of independent assortment.	1	2	2

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END OF THE QUESTION PAPER
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