Enrollment No._____

NAVRACHANA UNIVERSITY
a UGC recognized University

School: School of Science
Program/s: BMS
Year: 3rd **Semester:** 5th
Examination: End Semester Examination
Examination year: December 2022

Course Code: BM204 **Course Name:** Genetics II
Date: 13/12/2022
Time: 02:30 pm to 04:30 pm

Total Marks: 40
Total Pages: 1

Instructions:

- *Write each answer on a new page.*
- *Use of a calculator is permitted/~~not permitted~~.*
- ** COs=Course Outcome mapping. # BTL=Bloom's Taxonomy Level mapping*

Q. No.	Details	Marks	COs*	BTL#
Q.1	**Objective-based questions. (1M x 15Q = 15M)** 1. Draw a labelled image of an IS element. 2. How cotransduction contributes to gene mapping? 3. How hybrid dysgenesis contributes in drosophila? 4. Give one example of laboratory technique for bacterial transformation. 5. What is the feature of hot spot? 6. What is the significane of competent bacteria? 7. Why rII locus is crutial in phage T4? 8. Give example of multifactorial disorder. 9. Give one example of inborn error metabolism. 10. How Speciation occur in nature? 11. Differentiate between forward and reverse genetics. 12. Give two features of an ideal population. 13. How RNA-induced gene silencing is used in medicine? 14. ChIP-on-chip technique works on which principle? 15. What is the significance of systems biology?	15	CO1, CO2, CO3, CO4, CO5, CO6	BT1, BT2, BT3, BT4
Q.2	**Short answers. (3M x 5Q = 15M)** 1. Design an experiment to show whether mutation in E. coli is spontaneous. 2. Design an experiment to find the chemical nature of transforming factor in bacteria. 3. Describe: How Drosophila melanogaster and Saccharomyces cerevisiae are used in genetic studies? 4. Differentiate between normal, sickle cell anemia and thalassemia. 5. What is the limitation of Hardy-Weinberg law? Calculate allele and genotype frequencies from given data. 6. Explain three different approaches to study functional genomics.	15	CO1, CO2, CO3, CO4, CO5, CO6	BT1, BT3, BT5 BT6
Q.3	**Long answers. (5M x 2Q = 10M)** 1. Design an experiment to demonstrate time-dependent ordered gene transfer using three different strains. 2. Describe in detail: Structural and numerical disorders of chromosome. 3. Explain: How different types of natural selection contribute to allele frequency? Design an experiment to study if mutation can increase the rate of allele frequency.	10	CO1, CO2, CO3, CO4, CO5, CO6	BT1, BT3, BT4, BT5, BT6

	AA	Aa	aa
Individuals	70	80	50