Microbiology (P.G.)

[CBCS]

M.Sc. Second Semester End Examination-2024

(Regular & Supplementary Paper)

PAPER-MCB-202

[Genetics and Gene regulation]

Full Marks: 40 *Time: 02 Hrs*

The figures in the right hand margin indicate marks

Candidates are required to give their answers in their own words as far as practicable

Illustrate the answers wherever necessary

Group A

1. Answer any two questions of the following: 2x2= 4

a. What is deviation of mandelian inheritance? Give example. 1+1

b. How is RNAi involved in heterochromatisation in centromere? 2

c. What is jumping gene? 2

d. What are SINE and LINE? 1+1

2. Answer any two questions of the following: 2x4= 8

a. Explain founder effect and population bottleneck with suitable example for each. 4

b. What is meant by pleiotropy? Explain with example. 4

c. Differentiate between transformation and conjugation. 4

d. How docs homologous recombination repair double-strand break? 4

3. Answer any one question of the following: 1x8=8

a. What is epistasis? Explain epistasis with suitable example. Differentiate between dominance and epistasis. 2+3+3

b. What is Ac-Ds transposable element? Briefly describe the significance of transposable element. 4+4

Group B

1. Answer any two questions of the following: 2x2= 4

a. What is DICER and why is it needed? 2

b. What is meant by alternative splicing? 2

c. How many types of epigenetic modulation are found? 2

d. What is PCNA? What is its function? 2

2. Answer any two questions of the following: 2x4= 8

a. What is gene silencing? State the benefits of SDM briefly. 2+2

b. What are stem cells? How does progression from stem cells to progeny differentiation occur? 1+3

c. What is 7-MG capping? Write the process of transcription termination. 2+2

d. In eukaryotic mRNA which region does work as ribosome binding site? 4

3. Answer any one question of the following: 1x8=8

a. Briefly state the various promoters in eukaryotes. Write a short note on NER with its utility. 4+4

b. Write down the negative control of LAC operon. Write about SOS repair. Compare the negative and positive regulations of LAC operon 2+3+3
