KAMARAJ COLLEGE (Autonomous)

Accredited with A+ Grade by NAAC

(Affiliated to Manonmaniam Sundaranar University, Tirunelveli)

(3 Pages) **Reg. No:……**

Question Code: 26E01503 **Course Code : 24UMMB31**

UG Degree - End Semester Examinations, April 2026

Third Semester

B.Sc., MICROBIOLOGY

Molecular Biology and Microbial Genetics

(For those who joined in July 2024 onwards)

Time : 3Hours **Maximum : 75 Marks**

PART – A (10 × 1 = 10 Marks)

Answer ALL Questions

Choose the correct answer :

CO:1 K:1 1. DNA denaturation is normally taking place between —0°C

(a) 50-60 (b) 60-70

(c) 70-80 (d) 80-90

CO:1 K:1 2. Number of bases found in per pitch in B- DNA is _____

(a) 7 (b) 8

(c) 9 (d) 10

CO:2 K:1 3. The Pribnow box is associated with _____.

(a) Transcription (b) Translation

(c) Post Translational modification (d) Transformation

CO:2 K:1 4. Which of the following is a initiation codon?

(a) AUG (b) UUU

(c) UGA (d) UAG

CO:3 K:2 5. What is the main enzyme that plays a major role in formation of thymine dimer?

(a) DNA Glycosylase (b) DNA Photolyase

(c) DNA Gyrase (d) DNA Ligase

CO:3 K:2 6. What is the substitution of a purine base with a pyrimidine base known as?

(a) Deletion (b) Transition

(c) Addition (d) Transversion

CO:4 7. Linear plasmids are not found in the following one.

K:1

(a) Spirochetes (b) Actinomycetes

(c) Some fungi and Plants (d) E.coli

CO:5 8. Plasmid curing is not done by _____

K:2

(a) Ethidium bromide (b) Acridine Organge

(c) High Temperature (d) Glucose

CO:5 9. Select the process in which transposase enzyme is found useful.

K:2

(a) Conjugation (b) Transformation

(c) Transduction (d) Movement of Jumping genes

CO:5 10. Regarding Transposon, select the correct statement from the following.

K:2

(a) Discoverer American Scientist Barbara McClintock (b) Discovered in Apple

(c) Responsible for Recombination (d) It is known as jumping genes

PART – B (5 X 5 = 25 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 250 words.

CO:1 11. (a) Explain about supercoiling in bacterial DNA.

K:2

(OR)

(b) What do you know about rolling circle DNA replication?

CO:2 12. (a) Give an account on promoter.

K:2

(OR)

(b) Add a special note on termination codons.

CO:3 13. (a) How do we classify mutation?

K:2

(OR)

(b) Enumerate the benefits of mutation.

CO:4 14. (a) Comment on Resistance plasmids.

K:2

(OR)

(b) Briefly explain about plasmid curing.

CO:5 15. (a) Highlight the common method used for making bacterial cells competent.

K:3

(OR)

(b) Enumerate the properties of IS element.

PART – C (5 X 8 = 40 Marks)

Answer ALL Questions choosing either (a) or (b).

Answer should not exceed 500 words.

CO:1 16. (a) Showcase the enzymology of DNA replication in *E.coli*.

K:3

(OR)

(b) Illustratively explain the mode of DNA replication in bacteria.

CO:2 17. (a) Describe in detail the process of transcription with neat sketches.

K:4

(OR)

(b) What do you know about *Lac* operon?

CO:3 18. (a) Explain – How does microbes repair their DNA ?

K:3

(OR)

(b) Enumerate the commonly used chemical mutagens and record their effects.

CO:4 19. (a) Write an essay on the importance of plasmids.

K:2

(OR)

(b) Document the diverse types of plasmids found in microbes.

CO:5 20. (a) Can virus be useful for bringing genetic variation in bacteria – Explain in detail.

K:4

(OR)

(b) Unzip the relationship between transposons and genetic recombination.