

(6 pages)

Reg. No. :

Code No. : 6507

Sub. Code : ZMBM 21

M.Sc.(CBCS) DEGREE EXAMINATION,
NOVEMBER 2022.

Second Semester

Microbiology – Core

MOLECULAR BIOLOGY AND GENETICS

(For those who joined in July 2021 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the best answer :

1. Genetic information flows from _____
 - (a) DNA to DNA
 - (b) DNA to RNA
 - (c) RNA to cellular protein
 - (d) DNA to cellular protein

2. Chimeric DNA _____
 - (a) is found in bacteriophages
 - (b) contain unrelated genes
 - (c) has no restriction sites
 - (d) is palindromic
3. Sigma factor is component of _____
 - (a) DNA ligase
 - (b) DNA polymerase
 - (c) RNA polymerase
 - (d) Endonuclease
4. mRNA synthesis from DNA is termed as _____
 - (a) Transcription
 - (b) Transformation
 - (c) Translation
 - (d) Replication
5. The method of post transcriptional gene silencing is particularly useful in _____
 - (a) Plants
 - (b) Animals
 - (c) Insect
 - (d) Micro organism

6. The operon that encodes the enzymes in E.coli is an example of _____
- (a) how enzymes works in cell
 - (b) how gene control exists in cell
 - (c) how proteins are converted into energy compounds in cell
 - (d) how eukaryotic organism are evolved from prokaryotic organism
7. DNA transfer from one bacterium to another through phages is termed as _____
- (a) transduction (b) Induction
 - (c) Transfection (d) Infection
8. For transformation, micro particles coated with DNA to be bombarded with gene gun are made up of
- (a) Silicon or platinum (b) Gold or tungsten
 - (c) Silver or platinum (d) Platinum or zinc
9. The central block of the composite transposable element consists of a gene for
- (a) Transposase (b) Antibiotic resistance
 - (c) Integrase (d) Lactamase

10. _____ are repetitive DNA fragments which are inserted into chromosomes after they had been reverse transcribed from any RNA molecule.

- (a) Transfection (b) Retroposon
- (c) Replicator (d) Enzyme

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) What is plasmids? Write short notes on types of plasmids.
- Or
- (b) Why was Griffith's experiment important? Explain the experiment done by Griffith.
12. (a) Write a short note on RNA splicing, capping and poly adenylation.
- Or
- (b) Explain the functions of RNA polymerase in detail.

13. (a) Discuss in detail about trp operon. And list out the genes of trp operon.

Or

- (b) Describe post-transcriptional gene silencing.

14. (a) Explain about Triparental mating

Or

- (b) Discuss about the specialized transduction in detail.

15. (a) Write short notes on transposons of E.coli.

Or

- (b) Discuss detail about Retroposon.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) How are errors corrected during DNA Replication? Explain.

Or

- (b) Explain rolling circle replication in detail.

17. (a) What are the steps involved in transcription? Explain them.

Or

- (b) Describe in details about genetic code and its features.

18. (a) Write a short note on antisense RNA. And explain the epigenetic regulation of antisense RNA.

Or

- (b) Write a short note on promoters, terminators and attenuators.

19. (a) Write a detailed note on conjugation with neat diagram.

Or

- (b) What is general transduction? Explain the steps involved with a neat diagram.

20. (a) Give detailed account on insertion sequence.

Or

- (b) What are the transposons occurring in yeast? Explain.