

M.Sc. MICROBIOLOGY  
SECOND SEMESTER  
MOLECULAR BIOLOGY  
MMB-201

**SET  
A**

[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

Time: 30 mins.

Marks: 20

( Objective )

Choose the correct answer from the following:

1 × 20 = 20

- Which of the following is DNA made up of?
  - Adenine – Guanine
  - Cytosine – Thymine
  - Both a and b
  - None of the mentioned
- Which of the following does not take part in gene expression?
  - Transcription
  - RNA processing
  - Replication
  - Translation
- Which of the following is a type of RNA involved in protein synthesis?
  - snRNA
  - rRNA
  - yRNA
  - dsRNA
- The part that plays a critical role in even distribution of parental DNA during division is:
  - Telomere
  - Centromere
  - Spindle fibre
  - Centrioles
- Which of the following is RNA made up of?
  - Adenine, Cytosine, Guanine, and Uracil
  - Adenine, Guanine, Cytosine, and Thymine
  - Adenine, Guanine, Uracil and Thymine
  - Adenine, Uracil, Cytosine, and Thymine
- In cancer telomerase activity.....
  - Increases
  - Decreases
  - Remains constant
  - Plays no role
- Which of the following parts of the mRNA determines the specificity of the amino acid attached?
  - Acceptor stem
  - D loop
  - ΨU loop
  - Variable loop
- 5-bromouracil is the analog of which base?
  - Thymine
  - Guanine
  - Cytosine
  - Uracil
- In the following compound which is one of the intercalating agents?
  - 5-bromouracil
  - Purine
  - Ethidium
  - Clastrogen
- Which of the following functions of DNA is necessary for evolution?
  - Mutation
  - Replication
  - Translation
  - Transcription

11. The site at which first tRNA bind is.....
  - a. E
  - b. p
  - c. Ribosome
  - d. A
12. The enzyme needed for resolving catenated DNA is.....
  - a. Topoisomerase I
  - b. Topoisomerase II
  - c. Topoisomerase III
  - d. Topoisomerase IV
13. Rho factors are needed in.....
  - a. Activation
  - b. Initiation
  - c. Elongation
  - d. Termination
14. The bond of RNA cap is.....
  - a. 5'-3'
  - b. 3'-5'
  - c. 5'-5'
  - d. 3'-3'
15. Charged tRNA consists of.....
  - a. Anticodon
  - b. Amino acid
  - c. Amino acid and anticodon
  - d. Free of amino acids
16. The immediate product of translation is.....
  - a. Secondary structure
  - b. Tertiary structure
  - c. Primary structure
  - d. Native protein
17. DNA-RNA-Protein: PTM after transcription is the condition found in.....
  - a. Eukaryotes
  - b. Prokaryotes
  - c. Bacteria
  - d. Valid for all
18. Number of monomers found in protein with 300 codons is.....
  - a. 300
  - b. 200
  - c. 100
  - d. 150
19. Choose the correct option.
  - a. Gene is part of DNA
  - b. DNA is the part of gene
  - c. Gene and DNA are equal
  - d. Gene and DNA are similar
20. Phytolyase is involved in .....repair system.
  - a. UV
  - b. Nucleotide
  - c. Excision
  - d. DNA

**( Descriptive )**

Time : 2 hr. 30 mins.

Marks : 50

[ Answer question no.1 & any four (4) from the rest ]

- |  |          |
|--|----------|
| 1. Explain the structure of replicating fork indicating the enzymes involved in replication in prokaryotes.                | 5+5=10   |
| 2. What do you understand by RNA polymerase? Mention its parts and role in transcription.                                  | 3+7=10   |
| 3. Write the functions of E.P, A sites with suitable diagram. Explain how the termination occurs during translation.       | 6+4=10   |
| 4. What is DNA repair system? Illustrate the base excision repair system.  | 2+8=10   |
| 5. Define DNA. Describe the structure of DNA with the help of the Watson and Crick model. Also, give appropriate diagrams. | 2+8=10   |
| 6. Describe in detail Griffith's experiment of bacterial transformation. Also, add appropriate diagrams.                   | 10       |
| 7. Differentiate between:<br>a) DNA and RNA<br>b) Euchromatin and heterochromatin  | 2×5=10   |
| 8. Define operon. What are the different types of operons? Describe in detail an inducible operon.                         | 2+2+6=10 |

= = \*\*\* = =