

**B.Sc. BIOTECHNOLOGY  
FOURTH SEMESTER (REPEAT)  
MOLECULAR BIOLOGY  
BBT-401**



[USE OMR SHEET FOR OBJECTIVE PART]

Duration: 3 hrs.

Full Marks: 70

( Objective )

Time: 30 mins.

Marks: 20

*Choose the correct answer from the following:*

*1 × 20 = 20*

1. What are the characteristics of rough pneumococci strains?
  - a. Non-capsulated and pathogenic
  - b. Non-capsulated and nonpathogenic
  - c. Capsulated and pathogenic
  - d. Capsulated and non-pathogenic
2. In Griffith's experiment which of the following strains of pneumococci was isolated from dead mice?
  - a. Live rough cells
  - b. Dead rough cells
  - c. Live smooth cells
  - d. Dead smooth cells
3. Anticodon is present in:
  - a. DNA
  - b. tRNA
  - c. rRNA
  - d. mRNA
4. Nucleic acids are a polymer of nucleotide monomeric units. Each nucleotide consists of:
  - a. Base-sugar-OH
  - b. Sugar-phosphate
  - c. Base-sugar-phosphate
  - d. None
5. Which of the following bases is not present in DNA?
  - a. Adenine
  - b. Guanine
  - c. Thymine
  - d. Uracil
6. Identify the purine base of nucleic acids in the following.
  - a. Cytosine
  - b. Thymine
  - c. Uracil
  - d. Adenine
7. Which of the following RNAs are the most abundant in an animal cell?
  - a. mRNA
  - b. tRNA
  - c. miRNA
  - d. rRNA
8. The main polymerizing enzyme is.....
  - a. Pol III
  - b. Pol II
  - c. Pol I
  - d. None of the above
9. For transcription initiation .....is involved.
  - a. IF
  - b. Rho factor
  - c. Sigma factor
  - d. EuF
10. Choose the correct statement for transcription.
  - a. DNA-RNA is not formed
  - b. DNA-RNA is formed
  - c. Primer is required
  - d. Product is double stranded

11. The telomerase is needed for.....
  - a. Whole strand synthesis
  - b. End point synthesis
  - c. Only the DNA part
  - d. Only RNA part
12. Okazaki fragments are connected during.....
  - a. Throughout the reaction
  - b. Last phase of the reaction
  - c. Not needed
  - d. First phase of the reaction
13. The enzymes mainly responsible for .....are Pol I and Pol II.
  - a. Ligation
  - b. Polymerization
  - c. Priming
  - d. Repair
14. Initiation factors are..... in bacteria for translation.
  - a. 4
  - b. 13
  - c. 14
  - d. 3
15. In mutation..... are changed.
  - a. RNA
  - b. Amino acids
  - c. Protein
  - d. Nucleotides
16. Genetic code represents.....
  - a. tRNA
  - b. rRNA
  - c. mRNA
  - d. Anticodon loop
17. tRNA other than first, joint at.....
  - a. E site
  - b. P site
  - c. F site
  - d. A site
18. Photoreactivation is responsible for..... repair.
  - a. T-T dimer
  - b. A-A dimer
  - c. T-C dimer
  - d. G-G dimer
19. The mRNA is region is protected from exonuclease. It is..... bond.
  - a. 5'3'
  - b. 3'5'
  - c. 3'3'
  - d. 5'5'
20. The structure of the tRNA is.....
  - a. Cloverleaf
  - b. Crossbow
  - c. L shaped
  - d. Plus shaped

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**( Descriptive )**

Time : 2 hr. 30 mins.

Marks : 50

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

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| 1. Describe Griffith's experiment. What is the significance of the Griffith experiment?  | 8+2=10   |
| 2. What is RNA? Write a note on the different types of RNA. Describe the structure of Transfer RNA (tRNA) with a suitable diagram. | 2+3+5=10 |
| 3. What is mutation? Describe the characteristic features of mutations. Differentiate between a mutator gene and a mutable gene.   | 3+5+2=10 |
| 4. Explain the process of central dogma. Write a note on transcription in bacteria.  | 3+7=10   |
| 5. Write short notes on:<br>a) Ribozymes<br>b) Hyperchromatic Effect   | 2×5=10   |
| 6. Explain the roles of enzymes in replication.  | 10       |
| 7. Explain the role of sites of ribosome during translation process.   | 3+7=10   |
| 8. Define DNA repair. Explain the photoreactivation mechanism of repairing DNA.  | 2+8=10   |

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