

**M.Sc. MICROBIOLOGY  
SECOND SEMESTER  
MOLECULAR BIOLOGY  
MMB – 201**

( Use Separate Answer Scripts for Objective & Descriptive )

Duration : 3 hrs.

Full Marks : 70

( PART-A: Objective )

Time : 20 min.

Marks : 20

*Choose the correct answer from the following:*

**1X20=20**

- DNA found in a resting cell nucleus is
  - Octamer
  - 30nm fiber
  - 10nm fiber
  - Both b and c
- Which part of heterochromatin has more GC content?
  - Interband
  - Band
  - Both b and c
  - None
- The complex of DNA and histone proteins in the nucleosome is called
  - chromatin
  - chromatid
  - chromomere
  - all
- Which are the transcriptionally active site in polytene chromosome?
  - Dark band
  - Light band
  - Interband
  - All
- What is the repeat size of Microsatellite?
  - 1- 6bp
  - 1-10 bp
  - Both
  - 50 bp
- Who regulates catabolite activator protein in lac operon?
  - Glucose level
  - Lactose level
  - Both
  - None
- Shine dalgarno sequence is found in
  - Bacteria
  - Plants
  - Animals
  - Fungus
- The flow of information from genetic code to protein is mediated by
  - Golgi apparatus
  - Ribosome
  - Lysosomes
  - All are correct
- Where does the methyl group bind to DNA strand?
  - Major groove
  - Minor groove
  - Hydrogen bond
  - All

10. Why lampbrush chromosomes are called so?  
 a. Due to lateral loops  
 b. Due to balbiani rings  
 c. Due to chromomeres  
 d. All
11. There are .....initiation factors in bacteria.  
 a. 3  
 b. 13  
 c. 4  
 d. 19
12. The term mutation is the .....change in DNA.  
 a. Chronic  
 b. Random  
 c. Sudden  
 d. Slow
13. The enzymes mainly responsible for repair are  
 a. Pol II and Pol III  
 b. Pol I and Pol III  
 c. Pol I, Pol II and Pol III  
 d. Pol I and Pol II
14. The genes where only transcription takes place is  
 a. Pseudogenes  
 b. Processed pseudogenes  
 c. Both  
 d. None
15. Ethidium bromide is an example of.....mutagen  
 a. Chemical  
 b. Physical  
 c. Radiation  
 d. Mutant
16. The amino acids are present at top of tRNA which is mediated by  
 a. tRNA  
 b. Variable loop  
 c. Anticodon loop  
 d. Genetic code
17. Imagine the DNA having no telomere.  
 a. It is circular  
 b. Circular and double stranded  
 c. It is linear  
 d. Circular or exonuclease DNA product
18. Which of the following is present in a nucleosome?  
 a. H2A  
 b. H2C  
 c. Both a and b  
 d. H5
19. The cap in mRNA is .....bond  
 a. 5'3'  
 b. 3'5'  
 c. 5'5'  
 d. 3'3'
20. Similar sequences which differ in length only are known as  
 a. Repeats  
 b. Polymorphism  
 c. Tandem repeats  
 d. All

**( PART-B : Descriptive )**

Time : 2 hrs. 40 min.

Marks : 50

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

1. How does the abundance or absence of tryptophan in the medium controls attenuation in trp operon? Write briefly about multigene families. 6+4=10
2. What do you mean by operon? What is its composition? Write in brief about regulation of gene expression. What will happen to cell in presence of glucose? Justify your answer. 1+1+2+  
6=10
3. a. Write 4 differences between lampbrush and polytene chromosome.  
b. explain the structure of nucleosome and chromatin fiber with diagram. 4+6=10
4. Explain the Watson and Crick model of DNA? What is difference between ribose and deoxyribose sugar. 7+3=10
5. Write the mechanism of replication process with indicating the functions of enzymes involved in the process. 10
6. What is transcription? Explain the mechanism of transcription in prokaryotes. 2+8=10
7. Explain the process of central dogma? Write a note on translation initiation in bacteria. 3+7=10
8. What is mutation of DNA? Do you think it can lead to cancer? Justify your answer. Explain mismatch and nucleotide repair system. How is it possible for repair system to know the DNA strand containing the wrong base? Explain. 1+2+5+  
2=10

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