



KA-477

Seat No. _____

B. Sc. (Microbiology) (Sem. V) Examination

October / November - 2017

MI-501 : Molecular Basis of Microbial Genetics

(Core Course)

Time : 3 Hours]

[Total Marks : 70

1 (a) Define/Explain any three of the following : 6

- (i) Nucleotide
- (ii) Chromosome
- (iii) Genome
- (iv) Molecular genetics

(b) Answer any two of the following : 12

- (i) Write a short note on various fields of genetics.
- (ii) Draw a labelled helical DNA structure and discuss a nucleotide base pair.
- (iii) Write a short note on cell division.

2 (a) Define/Explain any three of the following : 6

- (i) Role of RNA primase enzyme.
- (ii) Write the complete DNA polymerisation reaction.
- (iii) Initiation of DNA replication.
- (iv) What is single replication.

- (b) Answer any **two** of the following : **12**
- (i) Discuss enzymes and proteins participating in DNA replication.
 - (ii) Why is a lagging strand so? Discuss its synthesis.
 - (iii) Discuss the Theta and rolling circle model of DNA replication.
- 3 (a) Define/Explain any **three** of the following : **6**
- (i) Bacterial promoter
 - (ii) DNA transcription
 - (iii) Ribosome
 - (iv) Operon
- (b) Answer any **two** of the following : **12**
- (i) Write a note on positive and negative control of Lac operon.
 - (ii) Draw a brief account of the steps of protein translation.
 - (iii) Write about the role of Sigma and Rho factor in the RNA synthesis.
- 4 Write a note on any **two** of the following : **16**
- (i) Types of Mutation.
 - (ii) Mismatch repair.
 - (iii) Photoreactivation repair.