



**JX-003-1015011** Seat No. \_\_\_\_\_

**B. Sc. (Sem. V) (CBCS) Examination**

**October – 2019**

**MB - 503 : Molecular Biology & Bio-Engineering  
(New Course)**

**Faculty Code : 003**

**Subject Code : 1015011**

Time :  $2\frac{1}{2}$  Hours]

[Total Marks : 70

**Instructions :**

- (1) There are two sections and both are compulsory.
- (2) Figures on right side indicate marks
- (3) Draw the figure wherever necessary
- (4) Write answers of all the questions in main answer sheet

- 1 A. Answer the following questions : 4**
1. Define replisome.
  2. What are nested genes ?
  3. Write the contribution of Thomas Hunt Morgan.
  4. DNA polymerase III is made of \_\_\_\_\_ subunits.
- B. Answer in brief : (Any one) 2**
1. Prokaryotic RNA are polycistronic. Explain.
  2. Define co-dominance.
- C. Answer in detail : (Any one) 3**
1. What is the difference between Test cross and Back cross ?
  2. Discuss cis trans complementation test.
- D. Write short note on : (Any one) 5**
1. Justify the statement "Deoxyribonucleic acid is the hereditary material."
  2. DNA Replication.

- 2** A. Answer the following questions : **4**
1. Write the pribnow sequence located at -10 region.
  2. Tryptophan acts as \_\_\_\_\_ to control its own biosynthesis.
  3. What are riboswitches ?
  4. What are isoaccepting t RNA ?
- B. Answer in brief : (Any one) **2**
1. Give types and levels of gene regulation.
  2. Write the role of Rho factor in transcription process.
- C. Answer in detail : (Any one) **3**
1. Describe the process of transcription.
  2. Discuss the structure of Ribosome.
- D. Write short note on : (Any one) **5**
1. Explain post transcriptional control.
  2. The Arabinose Operon.
- 3** A. Answer the following questions : **4**
1. What is abortive transduction ?
  2. Give full form of IPTG.
  3. What is non reciprocal recombination ?
  4. Give the examples of composite transposons.
- B. Answer in brief : (Any one) **2**
1. What is electroporation ?
  2. Structure of Tn3 transposon.
- C. Answer in detail : (Any one) **3**
1. Discuss in brief specialized transduction.
  2. Discuss site specific recombination.
- D. Write short note on : (Any one) **5**
1. Discuss the process of conjugation in gram positive and gram negative bacteria.
  2. Homologous recombination.
- 4** A. Answer the following questions : **4**
1. Write the function of photolyase.
  2. What are mutational hot spots ?

3. If second mutation occurs at the same position as the original mutation and restores wild type then it is \_\_\_\_\_.
  4. Give any one example of chemical mutagens
- B. Answer in brief : (Any one) **2**
1. What is phenotypic and phenomic lag ?
  2. Define: Pseudoreversion, AP sites
- C. Answer in detail : (Any one) **3**
1. Explain Fluctuation Analysis
  2. Explain the mechanism of SOS repair.
- D. Write short note on : (Any one) **5**
1. Biochemical basis of mutation
  2. Ames test
- 5** A. Answer the following questions : **4**
1. What is shuttle vector and write its example.
  2. Define chaperonins.
  3. Give full form of YAC and BAC.
  4. What is the role of protein disulphide isomerase ?
- B. Answer in brief : (Any one) **2**
1. Discuss role of Restriction endonuclease in genetic manipulation.
  2. Write two applications of genetic engineering.
- C. Answer in detail : (Any one) **3**
1. Discuss limitations of bacteria in gene cloning.
  2. Discuss method of detection of recombinant molecules.
- D. Write short note on : (Any one) **5**
1. Site directed mutagenesis.
  2. Explain out line of gene cloning.