



HCL-003-038501

Seat No. _____

**B. Voc. (Medical Laboratory & Molecular
Diagnostic Technology) (Sem. V) (CBCS)
Examination**

October – 2017

MLMDT - 5.1 : Molecular Biology & rDNA Technology

Faculty Code : 003

Subject Code : 038501

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

[Total Marks : 70

- Instructions :**
- (1) All question are compulsory.
 - (2) Figures to the right indicate marks.

1 Answer the following questions : **20**

- (1) Write the name of two DNA binding protein?
- (2) What is Zn-finger motif?
- (3) What is the importance of DNA supercoiling?
- (4) Name the protein that helps in recognition of promoter in prokaryotic replication.
- (5) What is the role of DNA ligase?
- (6) What is Replisome?
- (7) Which RNA made inside the nucleus of a cell, associates with proteins to form ribosomes?
- (8) Why intron splicing is required in eukaryotic m-RNA?
- (9) One side of a DNA molecule has the sequence TACGATCCG. What is the sequence of the complementary strand of mRNA?
- (10) Protein in Termination of transcription in prokaryotes is _____ .

- (11) The order of nitrogenous bases in DNA determines the order of _____ in proteins.
- (12) Which enzyme is responsible for peptide bond formation between amino acids in growing chain of polypeptide?
- (13) A lack of _____ this nonprotein molecule would result in the inability of the cell to "turn off" genes.
- (14) The lactose operon is likely to be transcribed when cyclic AMP and lactose both are low in the cell.
True/False
- (15) What are transposons?
- (16) mRNA is the starting material for making a cDNA library. True/False
- (17) Enzyme used in formation of cDNA from mRNA is _____.
- (18) What is cosmid?
- (19) *Thermus Aquaticus* is the source of which enzyme?
- (20) What is RFLP?

2 (a) Attempt any **three** of the following : **3x2=6**

- (1) Write difference between positive and negative super coiling?
- (2) Write the role of SSB in replication process.
- (3) What do you mean Okazaki fragments?
- (4) What is polyadenylation? Write its importance.
- (5) Enlist transcription factors.
- (6) What are stop codons? Give its role in protein synthesis.

(b) Attempt any **three** of the following : **3x3=9**

- (1) Write a note on histone protein.
- (2) Explain any one type of binding motif.
- (3) Which different enzymes are involved in replication of DNA?
- (4) How does transcription process initiate?
- (5) Describe the structure and function of RNA Polymerase III enzyme?
- (6) Write two differences in prokaryotic and eukaryotic Translation?

(c) Attempt any **two** of the following : **2x5=10**

- (1) Give the detail account of nucleosomal organization.
- (2) Describe prokaryotic DNA replication.
- (3) What type of post translational modification of protein can take place?
- (4) Write a note on steps of eukaryotic transcription initiation process.
- (5) Discuss the functions of various DNA polymerase enzymes.

3 (a) Attempt any **three** of the following : **3x2=6**

- (1) Compare and contrast repressible and inducible operons.
- (2) What is point mutation? Give one example.
- (3) Write about restriction endonucleases.
- (4) Write a note on insertional inactivation.
- (5) Write importance of primers in PCR.
- (6) What is probe?

(b) Attempt any **three** of the following : **3x3=9**

- (1) Write about SOS response.
- (2) Define the following terms :
 - (a) operon
 - (b) promoter
 - (c) inducer
- (3) Enlist different vectors used in Recombinant DNA technology.
- (4) Write a brief note on Nested PCR.
- (5) Describe of types of DNA damage.
- (6) Write a note of DGGE.

(c) Attempt any **two** of the following : **2x5=10**

- (1) What is catabolite repression and how does it work?
- (2) Write a note on excision repair.
- (3) Explain the methods by which the r-DNA is inserted inside the host Cells.
- (4) What is PCR? Describe various steps of PCR and lists its variations.
- (5) What are DNA Markers? Discuss the types of Hybridization Based Markers.