

SEAT NO. \_\_\_\_\_

No of printed pages: 02

[51/A12]

SARDAR PATEL UNIVERSITY  
B.Sc 5<sup>TH</sup> SEMESTER EXAMINATION 2019  
MONDAY, NOVEMBER, 11<sup>th</sup>, 2019.  
10.00 a.m. to 1.00 p.m.  
SUBJECT: MICROBIOLOGY US05CMIC01  
FUNDAMENTALS OF MOLECULAR BIOLOGY Total Marks: 70

Q-1 Attempt Multiple Choice Questions: Choose the Most Appropriate One. (10)

1. Zig-zag sugar phosphate backbone is found in this form of DNA  
a) A form                      b) B form                      c) Z form                      d) None of these
2. This bond links two nucleotides in same strand of DNA double helix.  
a) Hydrogen                      b) Phospho diester  
c) Glycosidic                      d) Peptide
3. Type of RNA that comprise of 80% of total RNA of the cell is,  
a) m-RNA    b) t-RNA                      c) r-RNA                      d) None of these
4.  $\phi$ X-174 replicates by.....  
a) Rolling circle Model                      b) Bidirectional replication  
c) Uni-directional replication  
d) Both by rolling circle and unidirectional replication
5. Number of Replicons found in eukaryotic DNA replication are \_\_\_\_\_  
a) One                      b) Two                      c) Three                      d) Multiple
6. RNA polymerase unwinds DNA strands at which site of strong promoter of *E.coli*?  
a) -35                      b) -10                      c) -30                      d) 10
7. During transcription process of prokaryotic DNA, RNA polymerase pauses when it reaches a termination site rich in ..... content that leads to the hairpin structure formation  
a) GC                      b) AT                      c) AU                      d) None of these
8. Capping of newly synthesized RNA in eukaryotes occurs  
a) At the 3' end, with 7-methyl guanosine    b) At the 3' end, with a poly(C)  
c) At the 5' end, with 7-methyl guanosine    d) At the 3' end, with a poly (U)
9. Which of the following step in elongation of amino acid chain during translation does not requires energy?  
a) Translocation                      b) Peptidyl transfer  
c) Binding of amino acyl t-RNA to A site                      d) all of these
10. AUG is initiation codon in  
a) Prokaryotes                      b) Eukaryotes                      c) Both a and b                      d) none of these

(1)

(P.T.O)

Q-2 Attempt any ten (10) questions in short. (20)

1. Mention Chargaff's rule of DNA composition.
2. Draw the molecular structure of A = T
3. What are histones? Mention their functions.
4. Draw a well labeled structure of t-RNA molecule.
5. What are Catenanes? How they are resolved?
6. Which living entities possess RNA replicase? Give examples.
7. What are introns and exons?
8. Draw strong promoter of *E. coli* and mention roles of important sites for transcription process.
9. Explain: Central Dogma for genetic information.
10. What do you mean Shine – Dalgarnon sequence?
11. What is t-RNA charging during translation process? How it is achieved?
12. How termination of translation takes place?

Q-3 (A) Write note on: forms of DNA (06)

(B) Explain experiment of Hershey and Chase (04)

OR

Q-3 (A) Explain Watson and Crick model of DNA (04)

(B) Write a note on: m- RNA and t-RNA (06)

Q-4 Explain molecular mechanism of DNA replication in *E. coli*. (10)

OR

Q-4 (A) Explain experiment that proves semi-conservative nature of DNA replication. (06)

(B) Explain: Rolling circle model of DNA replication. (04)

Q-5 Discuss molecular mechanism of transcription in *E. coli*. (10)

OR

Q-5 (A) Write a note on Lac- operon in *E. coli* (06)

(B) Enlist post transcriptional modifications in newly synthesized RNA in eukaryotes and explain any one in short. (04)

Q-6 Write an essay on: Genetic code: its deciphering and features. (10)

OR

Q-6 Write an essay on: Prokaryotic Ribosome: structure and function. (10)

—X—

(2)