

Seat No. _____



No. of printed pages : 02

35

SARDAR PATEL UNIVERSITY
B.Sc. Examination – 2022 Semester 5
Subject Code: US05CMIC21
Title: Molecular Genetics

Date: 10/11/2022
Day: Thursday

Time : 10 TO 01 PM
Total Marks: 70

N.B: Figure on the right indicate marks

Q.1 Multiple choice Questions [01 mark each]

10

- [1] The A form of DNA has _____ base pairs per helical turn.
[a] 10 [b] 10.5 [c] 11 [d] 11.5
- [2] Which bond does not present in DNA _____
[a] Peptide bond [b] phosphodiester bond [c] Glycosidic bond [d] Hydrogen bond
- [3] DNA replication mode is _____
[a] Conservative [b] Dispersive [c] Semi dispersive [d] None of them
- [4] _____ is the process where synthesis of single stranded RNA from a double stranded DNA template occurs.
[a] Transformation [b] Translocation [c] Transcription [d] Translation
- [5] _____ is responsible for initiation of RNA polymerase activity.
[a] DNA polymerase [b] sigma factor [c] rho factor [d] all of these
- [6] A molecule that contain a genetic code _____
[a] DNA [b] m-RNA [c] t-RNA [d] r-RNA
- [7] _____ is the start codon.
[a] UAG [b] AUG [c] AGU [d] UGA
- [8] _____ enzyme responsible for photoreactivation repair system.
[a] photoligase [b] photolyase [c] photo-oxidase [d] photoreductase
- [9] Transition type of gene mutation caused when _____
[a] GC is replaced by TA [b] CG is replaced by GC
[c] AT is replaced by CG [d] AT is replaced by GC
- [10] Replica plating technique was introduced by _____
[a] S. Luria and M. Delbruck [b] Bruce Ames
[c] J. Lederberg and E. Lederberg [d] M.Nirenberg

1

(P.T.O)

Q.2 Short Answer Questions [Attempt any 10]

20

- [1] Draw the structure of Adenosine.
- [2] Enlist two features of D form of DNA
- [3] What is the central dogma of protein synthesis ?
- [4] Define Teminism.
- [5] Define leader polypeptide.
- [6] What is Wooble hypothesis ?
- [7] Define genetic code.
- [8] Enlist termination factor of Protein synthesis in prokaryotes.
- [9] Enlist types biochemical modifications of protein to achieve their functional form.
- [10] What is base pair substitution ?
- [11] Discuss briefly : Silent mutations.
- [12] What is spontaneous mutation ?

Q.3

- [a] Describe component proteins of the DNA replication machinery in *E.coli*. 06
- [b] Discuss Hershey-Chase experiment. 04

"OR"

- [a] Discuss rolling circle model of DNA replication. 06
- [b] Describe characteristics of the different forms of DNA. 04

Q-4

- [a] Explain structure and function of bacterial RNA polymerase. 06
- [b] Describe mechanism of termination of transcription. 04

"OR"

- [a] Describe initiation & elongation of transcription in prokaryotes. 06
- [b] Explain RNA dependent synthesis of DNA. 04

Q-5

- [a] Describe elongation of translation process. 06
- [b] Explain structure and function of t-RNA. 04

"OR"

- [a] Explain in detail Lactose operon. 06
- [b] Write short note on : "Molecular Chaperones". 04

Q-6

- [a] Explain fluctuation test. 06
- [b] Write short note on : "Ames test". 04

"OR"

- [a] Describe effect of chemical mutagens on DNA. 06
- [b] Explain SOS repair system. 04

— X —
②