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SEAT No. _____

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Sardar Patel University

B.Sc- Semester examination-2018

B.Sc 3rd Semester

Subject – Bioinformatics

Course no. US03EMBI01

Date - 27.11.2018

Molecular biology-I

Tuesday

Time – 2hrs – 2.00 to 4.00 PM

Marks-70

NOTE- Figure in the right indicates marks .

All questions are compulsory. Make necessary diagram wherever needed.

Q.1. Multiple Choice Question (MCQ). Select correct answer from given MCQ. (10marks)

- 1.a. Which of the following bond are present between two bases of DNA
(A) Hydrogen bond (B) Disulphide bond (C) Glycosidic bond (D) Peptide bond
- 1.b. Select the bases which are only present in RNA not DNA
(A) Uracil (B) Thymine (C) Adenine (D) Guanine
- 1.c. Codons are ----- mRNA sequence
(A) Duplet (B) Triplet (C) Quadruplet (D) Pentalet
- 1.d. DNA replication is
(A) Dispersive (B) Consevative
(C) Semiconservative (D) Random
- 1.e. Which of the following enzymes has proofreading activities.
(A) Primase (B) Ligase
(C) DNA polymerase I (D) DNA polymerase III
- 1.f. Select the proteins which are involved in DNA repair
(A) DNA polymerase-I (B) DNA ligase
(C) Uracil DNA glycosylase (D) All of the above.
- 1.g UV rays cause the formation of
(A) Thymine dimer (B) Uracil dimer
(C) Guanine dimer (D) Adenine
- 1..h. In a given population of bacteria only few will undergo transformation because they are....
(A) Sporulating (B) Competent (C) Flagella (D) Pilai
- 1..i. Agent which cause mutation are called
(A) Mutagen (B) Pollutant
(B) Carcinogen (D) Teratogen \
- 1.j Transfer of gene from one bacterial cell to another bacterial cell through bacteriophage are called
(A) Transformation
(B) Transduction
(C) Conjugation
(D) Recombination

(P.T.O)

Q.2. Short questions (2 marks each) attempt any ten

(2x10=20marks)

- [1] Write a brief notes on composition of RNA.
- [2] What is nucleotides ?
- [3] What do you mean by genetic code?
- [4] What is role of DNA ligase in replication?
- [5] Define replication .
- [6] What is Okazaki DNA fragments?
- [7] Why DNA gets damaged?
- [8] Write a brief notes on importance of DNA repair.
- [9] How many types of DNA damage caused by Ionizing radiation?
- [10] Define transformation.
- [11] Write a brief notes on chemical mutagen.
- [12] What is gene mutation?

Q3.a. Explain the structure and properties of DNA double helix. [05]
Q3.b. Enlist the unique properties of genetic code [05]

OR

Q.3.a. Describe the structure of clover leaf model of tRNA. [05]
Q.3.b. Differentiate between mRNA and rRNA. [05]

Q.4.a. What is replication fork? Explain diagrammatically. [05]
Q.4.b. Explain the classes and properties of DNA polymerase. [05]

OR

Q.4.a. How DNA synthesis occurs at Leading and Lagging strand? Explain. [05]
Q.4.b. Write a note on termination of DNA replication.. [05]

Q.5.a. How DNA repair occurs through photoreactivation? Explain. [05]
Q.5.b. Write a note on mechanism of Base excision repair. [05]

OR

Q.5.a. Explain nucleotide excision repair with diagram. [05]
Q.5.b. Write a note on mechanism of SOS repair. [05]

Q.6.a. Discuss classes of transduction in detail. [05]
Q.6.b. Write a brief note on structural chromosomal aberrations. [05]

OR

Q.6. a. What is conjugation? Discuss classes of conjugation briefly. [05]
Q.6. a. Write a brief note on numerical chromosomal aberrations. [05]

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