

SEAT No. _____

(15)

SARDAR PATEL UNIVERSITY
B. Sc. (Genetics) – Fourth Semester Examination (CBCS)

Friday, 5th April 2019
10:00 a.m. to 1:00 p.m.

US04CGEN01 : Molecular Genetics and Biostatistics

Total Marks: 70

Note: (1) Figures to the right indicate marks.
(2) Draw a neat and labeled diagram, wherever necessary.

Q.1 Choose the most appropriate answer from the four alternatives given: [10]

- i. Thermal Death time is a.....**
 - (a) Time required to kill all the cells
 - (b) Temperature required to kill all the cells
 - (c) Time and Temperature required to kill all the cells
 - (d) None of these
- ii. Who is a first to observe , record and report about microorganisms?**
 - (a) Robert Hooke (b) Antony Van Leewenhock (c) Ernst Abb (d) Hans Gram
- iii.bacteria has much thicker cell wall.**
 - (a) Gram Negative (b) Gram Positive (c) Both "a and b" (d) Archie
- iv. Pribnow box is found in**
 - (a) Eukaryotes (b) Prokaryotes (c) Mammals (d) All of these
- v. Termination of prokaryotic translation require codon.**
 - (a) AUG (b) UAG (c) UGA (d) Both "a and b"
- vi.is a process by which RNA converted in to DNA.**
 - (a) Translation (b) Transcription (c) Reverse Transcription (d) Reverse Translation
- vii. Quantitative genes gives rise tovariation.**
 - (a) Continuous (b) Discontinuous (c) Genetic (d) All of these
- viii. Hardy Weinberg law is applicable to.....**
 - (a) Large population (b) Small population (c) Random mating population (d) All of these
- ix. When $r = 1$, then two variables are.....**
 - (a) Correlated (b) Regressed (c) Uncorrelated (d) Positively correlated
- x. What is a range of correlation coefficient?.**
 - (a) Between 0 & 1 (b) Between -1 & 0 (c) Between -1 & 0 (d) Between -1 & 1

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P.T.O.

Q.2 Answer any TEN from the following:

[20]

- i. Write contribution of Robert Koch.
- ii. Enlist culture media for cultivation of bacteria.
- iii. Differentiate between differential and selective media.
- iv. What is rolling circle mode of replication?
- v. Define the terms promoters and enhancers.
- vi. What are antisense RNA?
- vii. Differentiate between qualitative and quantitative traits.
- viii. Define the terms allele frequency and genotype frequency.
- ix. State Hardy Weinberg law.
- x. Write properties of correlation coefficient.
- xi. Explain positive correlation. Write two examples.
- xii. Define regression.

- Q.3 (a) Enlist method for the isolation of pure culture of bacteria. Discuss streak plate technique. [6]
(b) Draw neat and labelled figure for bacterial growth curve. [4]

OR

- Q.3 (a) Describe transformation experiment with neat and clean diagram. [6]
(b) Enlist different methods of sterilization. [4]

- Q.4 (a) Explain the initiation of prokaryotic replication. [5]
(b) Describe an experiment which proves semi-conservative mode of DNA replication. [5]

OR

- Q.4 (a) Describe processing of m-RNA. [5]
(b) What is primer? Give an overview of initiation protein synthesis in prokaryotes. [5]

- Q.5 Discuss applications of Hardy Weinberg law in a population. [10]

OR

- Q.5 Describe various factors affecting on allele and genotype frequency. [10]

- Q.6 (a) Differentiate between correlation and regression. [5]
(b) Explain scatter diagram method for studying relationship between two variables. [5]

OR

- Q.6 (a) Discuss Chi-square test. [5]
(b) Find Pearson's correlation coefficient for the following data: [5]

X	48	49	50	51	52	53	54	55	56
Y	98	100	88	102	95	125	120	110	125