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SEAT No. _____

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SARDAR PATEL UNIVERSITY
S.Y.B.Sc EXAMINATION, IVth Semester
Sat 7th day, 7th April 2018, 10.00a.m to 01.00p.m
Genetics: US04CGEN01 [Molecular Genetics & Biostatistics]

NOTE- Figures in the right indicate full marks.

Maximum Marks-70

Q.1. Multiple Choice Questions (10 marks- One Mark for Each MCQ)

1. Which of the following is not found in the growth curve?

- a. Lag phase b. Log phase c. Stationary phase d. Chemostat

2. Minimal media must contain;

- a. A source of trace element b. Source of purine c. Source of pyrimidines d. NaCl

3. Which one of the following molecule is not a component of the 30S initiation complex?

- a. GTP b. Initiation factor 2 (IF2) c. mRNA d. ATP

4. Elongation of peptide chain involves all except

- a. mRNA b. GTP & Peptidyltransferase c. EFTu & EFTs d. Fmet tRNA

5. Where is the amino-acid binding site located on the tRNA molecule?

- a. in the middle of the loop b. at the end of the 3' end of the molecule
c. in the first loop d. along the longest stretch of base pairing

6. Total of gene frequency is

- a. 1 % b. 100% c. both a and b d. none of above

7. HW law is applicable to

- a. large population b. random mating population c. small population d. All of above

8. $y = a + bx$ is the equation of straight line with slope _____.

- a. a b. b c. x d. none of these

9. If $r=1$, the two variables are _____.

- a. correlated b. uncorrelated c. positive correlated d. none of these

10. In the Karl Pearson's coefficient $r =$ _____.

- a. $\sqrt{S_x \cdot S_y}$ b. $\sqrt{(X_i - \bar{X})^2}$ c. $\frac{COV(X,Y)}{S_x \cdot S_y}$ d. $\frac{S_x \cdot S_y}{COV(X,Y)}$

Q.2. Short Question (any 10 question X 2 marks each)

[20]

1. What is Grams Staining? Describe its significance.
2. Discuss the contribution of Leeuwenhoek.
3. What is autoclave? Discuss its working principle.

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(P.T.O.)

4. Describe the post transcriptional modification of tRNA.
5. Describe translocase with its function.
6. Discuss the importance Activation of tRNA.
7. Give characteristics of Quantitative traits
8. Give characteristics of Qualitative traits
9. Enlist factors changing gene and genotype frequency
10. Explain the negative correlation with two examples.
11. Write properties of correlation coefficient.
12. Define Regression.

Q.3.a. What is differential media? Discuss it with example. [5]

Q.3.b. Discuss any one methods of isolating pure cultures. [5]

OR

Q.3.a. Discuss conjugation between F+ and F- with neat diagram. [5]

Q.3.b. Describe the methods of dry sterilization with its advantage. [5]

Q.4.a. Enlist the enzymes and proteins with function of prokaryotic replication. [5]

Q.4.b. Discuss the initiation of prokaryotic transcription. [5]

OR

Q.4.a. Discuss prokaryotic DNA and RNA polymerase with its function. [5]

Q.4.b. Describe the termination of prokaryotic translation. [5]

Q.5. Give an account of factors affecting changes in allele and genotype frequencies. [10]

OR

Q.5. Give an account of HW law with its proof and application [10]

Q.6.a. Explain the scatter diagram method of studying correlation between two variables. [5]

Q.6.b. Calculate Karl Pearson's coefficient of correlation between height and weight. [5]

Height (in cms)	138	112	134	129	148	150
Weight (in kgs)	40	28	34	45	47	43

OR

Q.6.a. Write difference between correlation and regression. [5]

Q.6.b. From the following data, obtain the regression line of equation X on Y. [5]

X	91	97	108	121	67	124	51	73	111	57
Y	71	75	69	97	70	91	39	61	80	47

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