[15]

SARDAR PATEL UNIVERSITY
M.Sc. (I-SEMESTER) Examination (Old Course)
Saturday, 21th April, 2018
M.Sc. Biochemistry
PS01EBIC01: BIOSTATISTICS

TIME: 10:00 AM to 01:00 PM   TOTAL MARK: 70

Q.1   Choose the correct answer of the following question in your answer sheet   [08]

1.   A circle in which sectors represents various quantities is called
       a. Histogram   c. Frequency
       b. Polygon   d. Pie Chart

2.   In a statistical table, row captions are called
       a. Box head   b. Stub
       b. Body   d. Title

3.   Which of the following is an absolute measure of dispersion?
       a. Coefficient of variation   b. Coefficient of dispersion
       b. Standard deviation   d. Coefficient of skewness

4.   Standard error (S.E.) is expressed as
       a. $S.E.= \sqrt{S.D.}/n$ c. $S.E.= \sqrt{S.D./n}$
       b. $S.E. = S.D./\sqrt{n}$ d. None of above

5.   Probability of failure in binomial distribution is denoted by
       a. $p = q +1$ c. $p = q - 1$
       b. $q = 1 + p$ d. $q = 1 - p$

6.   If the $r=0.6$, $\sigma_y=10$, $\sigma_x=4$ then regression coefficient of x on y is
       a. 0.28   b. 0.24
       b. 24   d. 1

7.   Which statistical test is used for the testing of significance of a single mean when population variance is unknown?
       a. F-test   c. Z-test
       b. 't' distribution test   d. Chi-square test

8.   In the regression equation $Y = a+bX$, the Y is called
       a. Independent variable   c. Dependent variable
       b. Continuous variable   d. None of the above

Q.2   Answer any SEVEN of following question briefly.   [14]

1.   Define the median and give its formula for grouped and ungrouped data.

2.   For two independent event A and B, if $P(A) = 0.3$ and $P(A \cup B) = 06$, then find out the value of $P(B)$

3.   Give an account on : Scattered plot diagram

4.   For the 2x2 contingency table. Find out χ^2 value.

	B	b
A	21	36
a	48	26

5.   The mean and S.D. of aspirin powder using reactant A is 50.5 & 17.89 where as 15.5 & 22.80 for reactant B respectively. Which reactant shows more efficiency regarding % yield of aspirin?

6.   Find out the probability of getting at least one head in two throws of an unbiased coin.

7.   What is Null hypostasis? Explain various types of errors in testing a hypothesis.

8.   Find out the line of regression Y on X and find out estimated sales if the advertisement expenditure is Rs. 10.

	Advertisement X (Rs. In Rupees)	Sales Y (Rs. in Rupees)
Mean	20	120
S.D.	5	25
Correlation coefficient = 0.8		

9.   Define the terms: Two tailed and One tailed test.

(P.T.O.)

(1)

Q.3 a. What is primary and secondary data? Explain the stratified method for collection of   6
data.

b. Represent the following data of two families in component and percentage bar   6
diagram.

Item of expenditure	Food	Clothes	Rent	Fuel & Light	miscellan eous
Family A	2000	1000	1000	800	500
Family B	2500	1200	900	600	300

OR

b. Find out the standard deviation of the following distribution   6

Protein intake per day	15-25	25-35	35-45	45-55	55-65	65-75	75-85
No. of families	30	40	100	110	80	30	10

Q.4 a. Define random experiment, Elementary events, and mutually exclusive events. Write   6
an account on addition and multiplication theorems of probability.

b. A and B play a game in which their chances of winning are in the ratio 2:3. Find A's   6
chance winning at least three games out of five games played and exactly 3 games.

OR

b. A medical practioner screens a random sample of 250 of his patients for a certain   6
condition which is present in 1.5% of the population. Find the probability that he
obtained (i) no patient with the condition (ii) at least two patient with the condition.

Q.5 a. Tablets were weighted and assayed for the drug content. Results are given below. Find   6
correlation coefficient between the weight of tablet and assay by using Karl Pearson's
coefficient.

Weight	200	205	203	201	195	203	198	200	190	205	207	210
Assay	11	10	9	12	10	10	13	12	16	15	11	14

b. Defien correlation. Describe the various types of correlation with its properties.   6

OR

b. A standard curve passing through the origin was prepared for colorimetric estimation   6
of sulphadiazine. The concentration and absorbances are given below. Find the
equation of line.

Concentration ($\mu g/ml$)	5	10	15	20	30	40
Absorbance	0.120	0.231	0.362	0.458	0.698	0.888

Q.6 a. List various types of t-test. Explain paired t-test in details.   6

b. An I.Q test was administered to 5 medical representatives before and after they were   6
trained. The results are given below. Test whether there is any change in I.Q. after the
training programme using t-test.

Candidate No.	1	2	3	4	5
I.Q. before training	110	120	123	132	125
I.Q. after training	120	118	125	136	127

OR

b. What is testing of hypothesis? Give an account on various types of Z test.   6

———— x ————