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SEAT No. _____

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No. of Printed Pages: 04

SARDAR PATEL UNIVERSITY

External Examination

M.Sc. (Botany) Semester - I

Subject: PS01EBOT21 - Biostatistics

Monday, 29th October, 2018

Time: 10:00 a.m. to 01:00 p.m.

Total marks: 70

Note: Figures to right side indicate marks.

Q.1 Choose the most appropriate alternative for the following:

[8]

1. Editing of primary data is done for:
A) Completeness
B) Consistency
C) Accuracy
D) All of Above
E) None of Above
2. We can accept the null hypothesis and conclude that the population means are all equal if:
A) P-value $> \alpha$
B) P-value $< \alpha$
C) P-value $= \alpha$
D) All of above
E) None of Above
3. Binomial probability distribution is suitable for handling probability of _____ random variable.
A) Individual
B) Discrete
C) Continuous
D) All of Above
E) None of Above
4. Probability of getting face with number 2 up, when a fair dice is thrown is _____.
A) 1
B) 1/2
C) 1/4
D) 1/6
E) None of Above
5. Calculation of Bowley' coefficient of skewness is based on _____.
A) Deciles
B) Median
C) Quartiles
D) Percentile
E) None of Above
6. If a curve of frequency distribution is more peaked than the normal curve it is called as _____.
A) Platykurtic
B) Mesokurtic
C) Normal
D) leptokurtic
E) None of Above

(1)

[P.T.O.]

7. As the number of degrees of freedom increases, the distribution becomes more ____.
- A) Peaked
B) Asymmetrical
C) Bulged
D) Symmetrical
E) None of Above
8. A test that allows making comparisons between the means of three or more groups of data where two independent variables are considered is _____.
- A) Regression
B) One way ANOVA
C) Two way ANOVA
D) Both A & B
E) None of Above

Q.2 Attempt any seven of the following:

[14]

1. Define statistics and explain various sequential stages of statistical investigation.
2. Give the relationship between A.M., H.M. and G.M. and prove it.
3. Enlist the various measures of central tendency. Define anyone of them with its advantages and disadvantages.
4. Explain various types of ogives used in statistics.
5. Define sample. Write down the merits and demerits of sample survey.
6. Explain perfect positive and perfect negative correlation and give the values of "r" for both.
7. What do you mean by Skewness? Explain its types.
8. State the addition theorem and prove it.
9. Explain Exhaustive events.

Q.3 A. Compute Kurtosis and comment on the peakness of the curve.

[6]

No. of leaves	4	14	24	34	44	54	64	74	84	94
No. of Plants	1	5	12	22	17	9	4	3	1	1

B. Draw (i) Histogram (ii) Frequency polygon and (iii) Percentile curve using following data:

[6]

Molecular weight in Mole	10-15	15-20	20-25	25-30	30-35	35-40	40-45
No. of Protein	12	24	32	20	17	17	13

OR

B. Give equation of Bayes' theorem and prove it.

[6]

- Q.4 A. Obtain both regression line equations from following data and determine the blood pressure when the age of person is 50 years. [6]

Sr. No.	1	2	3	4	5	6	7	8	9	10	11	12
Age	56	42	72	39	63	47	52	49	40	42	68	60
Blood pressure	127	112	140	118	129	116	130	125	115	120	135	133

- B. Calculate value of combined standard deviation for following data. [6]

No. of leaves	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of flowers	5	9	13	21	20	17	7	3

OR

- B. Following data shows the ranks of ten organisms by three different labs for the alcohol production; by using rank correlation coefficient determine which labs are following the nearest strategy for testing: [6]

Rank by Lab 1	1	6	5	10	3	2	4	9	7	8
Rank by Lab 2	3	5	8	4	7	10	2	1	6	9
Rank by Lab 3	6	4	9	8	1	2	3	10	5	7

- Q.5 A. Calculate skewness (β_1) for the following data by using the moments: [6]

Gene size	500-510	510-520	520-530	530-540	540-550	550-560	560-570
No. of SNP	1	3	7	20	12	4	3

- B. The manufacturer of certain makes drug claims that his drugs have a mean dissolution time of 25 minutes with standard deviation of 5 minutes. A random 6 sample of such drug were taken to test dissolution time and it gave the following dissolution time : [6]

Dissolution time of six drugs in minutes	24	26	30	20	20	18
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Carry out "t - test" for the data and comment on the claim of the manufacturer is valid or not at 1% level of significance. (Value of "t" at 1% level of significance is 4.032)

OR

3

[P.T.O.]

- B. Define and describe statistical inference? Discuss various steps of hypothesis testing; also discuss about four possibilities of results when hypothesis is tested in statistic. [6]

- Q.6 A. Find value of value of Karl Pearson's coefficient of correlation for the following data. [6]

No. of leaves (X)	48	35	17	23	47
No. of flowers (Y)	45	20	40	25	45

- B. In an experiment to study the dependence of hypertension on smoking habits, the following data were taken on 180 individuals. [6]

	<i>nonsmokers</i>	<i>Heavy smokers</i>
Hypertension	21	66
No hypertension	74	19

Test the hypothesis that the presence or absence of hypertension is independent of smoking habits at 5% level of significance using χ^2 test. (For $\nu = 1$, value of χ^2 at 5% level of significance is 3.84)

OR

- B. Two random samples were drawn from two normal population and their values are as follows: [6]

Sample 1	66	67	75	76	82	84	88	90	92	--	--
Sample 2	64	66	74	78	82	85	87	92	93	95	97

Test whether the two populations have the same variance at the 5% level of significance using "F" test. (For $\nu = 10$ and $\nu = 8$, value of F at 5% level of significance is 3.36)

