



SEAT No. _____

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[62]

Sardar Patel University
S.Y.B.Sc.(Semester-III) Examination
Subject:-Descriptive Statistics
Paper Code:-US03CSTA01

Date:-15/06/2022, Wednesday

Time:-12:00 p.m. to 02:00 p.m.

Marks:-70

[10]

Q.1. Multiple Choice Questions: -

1. _____ can be calculated from a frequency distribution with open end class.
(a) Mode (b) Median (c) both (a) & (b) (d) None
2. Median = _____ Quartile.
(a) First (b) Second (c) Third (d) None
3. The empirical relationship between mean, median and mode for a moderately asymmetrical distribution is _____.
(a) $Md=2Mo-3M$ (b) $Mo=3Md-M$ (c) $M= Md-Mo$ (d) None
4. Standard deviation is always _____ than zero.
(a) Less (b) Greater (c) Equal (d) None
5. If $Q1 = 10$; $Q3 = 40$, the coefficient of quartile deviation is _____.
(a) 0.6 (b) 0.8 (c) 0.9 (d) None
6. Literally meaning of Skewness is lack of _____.
(a) Symmetry (b) Asymmetry (c) both (a) & (b) (d) None
7. Index numbers are also known as _____.
(a) Economic barometers (b) Signs and guide parts
(c) Both (a) and (b) (d) Neither (a) nor (b)
8. Index numbers reveal the state of _____.
(a) inflation (b) deflation (c) Both (a) & (b) (d) None
9. The crude birth rate usually lies between _____.
(a) 8 and 30 per thousand (b) 5 and 35 per thousand (c) 2 and 32 per thousand (d) None
10. For comparing the health conditions of two towns, we have to calculate _____.
(a) Crude death rate (b) Crude birth rate (c) Infant mortality rate (d) None

[08]

Q.2. Fill in the blanks with the appropriate answer: -

1. Algebraic sum of deviation is zero from _____.
 2. The geometric mean of a set of values lies between arithmetic mean and _____.
 3. Kurtosis is a measure of _____ for the frequency curve.
 4. The limits for quartile coefficient of skewness (i.e. Bowley's coeff. of skewness) is _____.
- State whether the following are questions True or false:-
5. Laspyre's index formula uses the weights of Base year.
 6. Paasche's index formula uses the weights of both current and base year.
 7. Example of Vital events is Marriage.
 8. Measure of Mortality is Crude birth rate.

[20]

Q.3. Short Questions: - (Attempt any Ten)

1. Which measure is the best measure? Why?
2. State and prove the properties of Mean.

- 3 Show that the geometric mean of two positive values X_1 and X_2 is always less than or equal to the arithmetic mean when are the two means equal?
- 4 State and prove the property of Standard deviation.
- 5 The first three moments about origin are given by

$$\mu'_1 = \frac{(n+1)}{2}; \mu'_2 = \frac{(n+1)(2n+1)}{6}; \mu'_3 = \frac{n(n+1)^2}{4};$$

Examine the skewness of the given data.

- 6 The share holders Research Center of Inida has conducted the survey of three leading industries Shares A,B and C,the results were published as follows:

Share	Average	Standard deviation	Current Price
A	18.2	5.4	36
B	22.5	4.5	34.75
C	24	6	39

- (a) Which shares appears more stable in value?
- (b) If you are holder of all three shares which one would you like to dispose of at present, and why?
- 7 What is the Index numbers?
- 8 State the uses of Index numbers.
- 9 Does the following index number formula satisfy factor reversal tests:

$$I = \sqrt{\frac{\sum p_0 q_1}{\sum p_1 q_0}} \times \sqrt{\frac{\sum p_1 q_1}{\sum p_0 q_0}} \times 100$$

- 10 What is the Vital Statistics?
- 11 Which measures would you recommend for
- (i) Comparing mortality of the population of country at different points of time.
- (ii) Comparing mortality of different segments of the population o a country at a given point of time
- 12 What is the crude death rate?

Q.4. Long Questions: - (Attempt any four)

[32]

- 1 The following table gives the frequency distribution of marks in a class of 65 students:

Marks	0-4	4-8	8-12	12-14	14-18	18-20	20-25	25&over
No. of student	10	12	18	7	5	3	4	6

- Calculate (i) Q3(Upper) and Q1(lower) quartiles.(ii) Number of students who secured marks more than 17. (iii) Number of students who secured marks between 10 and 15. (iv) Mode (v) Median.
- 2 Following is the distribution of marks in Statistics obtained by 50 students.

Marks (More than)	00	10	20	30	40	50
No .of students	50	46	40	20	10	3

- Calculate the mode, median and mean marks. If 60% of the students pass this test, find theminimum marks obtained by pass candidates.
- 3 A study was conducted comparing female adolescents who suffer from bulimia to healthy females with similar body compositions and levels of

physical activity. Listed below are measures of daily caloric intake, recorded in kilocalories per kilogram of samples of adolescents from each group.

Bulimic			Healthy	
15.9	18.9	25.1	20.7	30.6
16.0	19.6	25.2	22.4	33.2
16.5	21.5	25.6	23.1	33.7
17.0	21.6	28.0	23.8	36.6
17.6	22.9	28.7	24.5	37.1
18.1	23.6	29.2	25.3	38.4
18.4	24.1	30.9	25.7	40.8
18.9	24.5		30.6	

- (i) Find the median daily caloric intake for both the bulimic adolescents and the healthy ones.
- (ii) which group has greater amount of variability in the measurement.
- 4 Calculate Mean, Median and Mode and also draw Stem and Leaf Plot Here is a set of data on showing the test scores on the last science quiz. 56, 78, 82, 82, 90, 94, 93, 67, 67, 69, 74, 77, 92, 88, 81, 83, 84, 77, 72
- 5 DOC Company produces and sells four types of electric appliances. The prices and quantities in 2009 and 2010 are shown below:

Type	2009		2010	
	Price (Rs)	Quantity	Price (Rs)	Quantity
Radio	100	20	120	15
Toaster	200	40	250	25
Clock	130	30	130	50
Hair dryer	225	10	250	10

- 6 Calculate the Laspyre's price index, Paasche's price index Fisher's ideal Index number and Marshall Edge worth's Price Index number to measure the overall changes between 2009 and 2010
- 7 State the formula for calculating Index numbers. Apply factor reversal and Time reversal test to Laspyre's, Paasche's and Fisher Index numbers.
- 7 The number of births occurring in a country in a particular year is shown, here classified according to age of mother, together with the female population in each age-group of the reproductive period.

Age-group	Female population	Number of births to mothers in the age
15-19	84796	2349
20-24	70018	14547
25-29	72660	16746
30-34	75924	10229
35-39	75109	5257
40-44	71625	1432
45-49	66660	93

The total population of the country during the year was 2285800. With the above data, determine

- (i) the crude birth rate
- (ii) the general fertility rate
- (iii) the age specific fertility rate
- (iv) the total fertility rate.

Assuming that the sex ratio at birth was 104.6 male births to 100 female births: determine also gross reproduction rate.

- 8 Calculate the crude and standardized death rates for the local population from the following data and compare them with crude death rate of the standard population by Direct and Indirect method.

Age group	Standard Population	Death	Local Population	Death
0-10	600	18	400	16
10-20	1000	5	1500	6
20-60	3000	24	2400	24
60-100	400	20	700	21

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④