

24.10.19
FYBA
*YB ADZ

Sem. I
Stats. I

Duration: 3 Hours

Marks: 100

N.B.: 1. All questions are compulsory.

2. Figures to the right indicate marks.
3. Graph paper is provided on request.
4. Use of simple calculator is allowed.

- Q.1. (a) Correct the following if necessary. (10)**
- (i) Gender, religion are examples of qualitative data. (02)
 - (ii) Population is subset of sample. (02)
 - (iii) Lower limit is excluded in case of exclusive type of class intervals. (02)
 - (iv) Quartile deviation is used to compare the variability in two different sets of data. (02)
 - (v) The symmetric curve is always mesokurtic curve. (02)
- (b) Answer in one sentence. (10)**
- (i) What are the sources available for collection of secondary data? (02)
 - (ii) Distinguish between variable and attribute. (02)
 - (iii) State any two components of statistical table. (02)
 - (iv) State the empirical relation between mean, median and mode. (02)
 - (v) Explain the role of range as a measure of dispersion. (02)

- Q.2. Attempt ANY TWO (20)**
- (a) Explain what is meant by secondary data. Discuss various sources of secondary data. (10)
State differences between primary data and secondary data.
 - (b) Define questionnaire. Discuss the requirement of good questionnaire. (10)
 - (c) (i) State the requirements of a good statistical table. (10)
(ii) Give a blank table representing data on students of a college according to following characteristics in a table-
(p) Faculty: Arts, Science, Commerce (q) Class: First year, Second year, Third year
 - (d) Describe different scales of measurement with example. (10)

- Q.3. Attempt ANY TWO (20)**
- (a) (i) Write a short note on stem and leaf diagram. (10)
(ii) The monthly earnings of 30 employees are given below:

Monthly income (in '000 Rs)	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40
No. of employees	7	9	12	14	8

- (a) Obtain cumulative frequency distribution of less than type.
 - (b) Obtain 5th decile
 - (c) 26th percentile
- (b) (i) What are the requirements of a good measure of central tendency? (10)
(ii) Discuss properties of arithmetic mean.
- (c) Define – (a) Arithmetic mean (b) Geometric mean (c) Harmonic mean. (10)
For any two positive numbers a and b, show that $GM^2 = AM \times HM$

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(10)

- (d) (i) Define median. Explain how it is calculated for (a) raw data (b) ungrouped frequency distribution (c) grouped frequency distribution.
(ii) Find the arithmetic mean and mode for the following data:

Classes	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Frequency	12	18	27	20	17	6

Q.4. Attempt ANY TWO (20)

- (a) Explain the concept of dispersion. State expressions for all absolute and relative measures of dispersion. Explain utility of relative measures of dispersion. (10)
- (b) (i) Define raw moments and central moments. (10)
(ii) Derive expressions for first two central moments and state expressions for μ_3 and μ_4 in terms of raw moments about origin zero.
- (c) (i) Explain concept of Kurtosis and discuss types of kurtosis. State measure of kurtosis. (10)
(ii) For a distribution, mean is 10, S.D. is 3, $\beta_1 = 1$, $\beta_2 = 3.5$. Obtain first four central moments.
- (d) Calculate Karl Pearson's coefficient of skewness, Bowley's coefficient of skewness (10) for the following data –

Age (in years)	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
No. of persons	1	4	11	16	14	4

Q.5. Attempt ANY FOUR (20)

- (a) What do you mean by classification of data? What are the objectives of classification? (05)
- (b) Discuss coefficient of association and coefficient of colligation. (05)
- (c) Distinguish between a questionnaire and a schedule. (05)
- (d) For any two positive numbers a, b show that (05)
 $A.M. \geq G.M. \geq H.M.$
- (e) State merits and demerits of mode. (05)
- (f) Bring out the significance of the study of Dispersion of data. (05)
- (g) With reference to graphical display, explain the Box plot. (05)
