BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(MID SEMESTER EXAMINATION)

CLASS: IMSC / BSC. **SEMESTER : 1ST**
BRANCH: QEDS / CHEMISTRY **SESSION : MO/2024**

SUBJECT: ED24103 STATISTICAL METHODS - I

TIME: 02 Hours **FULL MARKS: 25**

INSTRUCTIONS:
1. The question paper contains 5 questions each of 5 marks and total 25 marks.
2. Attempt all questions.
3. The missing data, if any, may be assumed suitably.
***4*. Graph paper will be supplied to the candidates.**
5. Calculator is allowed during the examination.

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Q.1 The daily footfall at a retail store in Bangalore over the last 30 days is shown below (the data are arranged in ascending order):

161	164	165	173	186	196	197	212	213	213
216	219	219	221	225	229	232	244	247	251
252	260	261	269	272	277	283	290	314	316

(a) Plot a histogram and a frequency polygon for the above data. [3] 1 3
(b) What insights can you draw about the daily footfall in that retail store? [2] 1 3

Q.2 For the ungrouped data given in Q.1, calculate mean, median, mode, 1st quartile, 7th decile and 67th percentile. [Do not make class intervals while calculating these measures]. Interpret all these measures. [5] 2 3

Q.3(a) Compare and contrast mean, median and mode based on the criteria of ideal measures of central tendency. Mention any six points. [3] 2 2
Q.3(b) Explain four measurement scales (nominal, ordinal, interval and ratio) with suitable examples. [2] 2 2

Q.4 The table below presents the data on 12 shares and its return value (in '00 Rs). [5] 2 4

3.3	1.5	1.4	1.4	2.6	1.8
2.7	2.2	1.3	2.8	1.8	1.8

Is the distribution of the share values positively skewed? Use an appropriate measure to answer this.
Is the distribution of the share values mesokurtic? Use an appropriate measure to answer this.

Q.5(a) In two sets of variables X and Y with 50 observations each, the following data were observed: [3] 3 4
$\bar{X}$=10, $\sigma_x = 3, \bar{Y} = 6,\ \sigma_y = 2\ and\ r(X,Y) = 0.3$
But on subsequent verification it was found that one value of X (= 10) and
one value of Y (= 6) were inaccurate and hence later omitted from the dataset. With the remaining 49 pairs of observations, calculate the updated r(X,Y).
Q.5(b) If X and Y are normal and independent with zero means and standard deviations 9 and 12 respectively, and if (X + 2Y) and (kX – Y) are non-correlated, find k. [2] 3 4

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