

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: IMBA/BBA/BSC
BRANCH: MANAGEMENT**

**SEMESTER : I
SESSION : MO/2025**

SUBJECT: MN25119 STATISTICS FOR MANAGERS

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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- Q.1(a) How primary and secondary data can be collected to conduct applied research? [5] CO 1 BL 2
- Q.1(b) The following table shows the daily wage distribution of 70 workers in a factory. [5] CO 1 BL 3

Daily Wage (₹)	Number of Workers
100 - 200	5
200 - 300	10
300 - 400	15
400 - 500	25
500 - 600	10
600 - 700	5

Based on this data, draw the 'less than' and 'more than' ogive curve for this distribution.

- Q.2(a) A market researcher analyzed the daily sales (in ₹ '000) of 50 small retail shops in a city. The data was summarized into the following frequency distribution: [5] CO 2 BL 3

Daily Sales (in ₹ '000)	Number of Shops
50 - 100	5
100 - 150	12
150 - 200	18
200 - 250	9
250 - 300	6

Determine the modal value (mode) of the daily sales. Explain what this value represents in the context of the problem.

- Q.2(b) A survey was conducted on the time (in minutes) it takes for 50 employees of a company to travel to the office. The data collected is summarized in the following frequency distribution table: [5] CO 2 BL 3

Daily Travel Time (in minutes)	Number of Employees
0 - 10	5
10-20	12
20 - 30	18
30 - 40	9
40 - 50	6

Based on this data, calculate the mean travel time.

PTO

- Q.3(a) Explain the purpose of measures of dispersion in statistics. [5] 3 2
 Q.3(b) The table below shows the distribution of examination scores for 50 students. [5] 3 3
 Calculate the sample standard deviation of examination score of the students.

Class Interval (Scores)	Frequency (f)
50-60	5
60-70	12
70-80	18
80-90	10
90-100	5
Total	n=50

- Q.4(a) The data below shows the relationship between the number of study hours (X) and the corresponding examination scores (Y) of five students: [5] 4 3

Students	Study Hours (X)	Examination Score (Y)
A	2	3
B	3	5
C	3	6
D	4	7
E	5	8

Find out the least squares estimators of the slope (b) and intercept (a) for the linear regression equation and construct the Regression Equation and predict the examination score of a student if he/she studies for 6 hours.

- Q.4(b) The scores of 5 students in Mathematics and Science are given below. Calculate the Spearman rank correlation coefficient between their scores and interpret whether the correlation is positive, negative, or no correlation based on the calculated r_s/R . [5] 4 3

Students	Mathematics Score	Physics Score
A	85	78
B	95	88
C	80	82
D	70	72
E	90	85

- Q.5(a) How forecasting contributes business functions and what would be the potential consequence for a business if its forecasts were consistently inaccurate? [5] 5 2

- Q.5(b) The following data shows the annual sales (in ₹ lakhs) of a small manufacturing company from 2012 to 2021. [5] 5 3

Year	Sales (₹ lakhs)
2012	52
2013	58
2014	60
2015	66
2016	70
2017	76
2018	82
2019	86
2020	92
2021	96

Apply the Method of Semi-Averages to the given data to determine the trend line and estimate the sales for the year 2024.