

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

CLASS: MBA
BRANCH: MANAGEMENT

SEMESTER : I
SESSION : MO/18

SUBJECT: MT405 QUANTITATIVE TECHNIQUES FOR MANAGEMENT

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) Describe briefly the terms Primary data and Secondary data with examples. [5]
Q.1(b) Distinguish between Census and Sample survey. [5]

- Q.2(a) Describe briefly the various measures of Central tendency. [5]
Q.2(b) Determine the mean, variance and coefficient of variation for the following frequency data: [5]

x	4	12	20	28	36	44
f	8	7	16	24	15	7

- Q.3(a) Define Karl Pearson's correlation coefficient, and hence obtain the correlation coefficient between X and Y for the following data: [5]

X	1	3	4	5	7	8	10
Y	2	6	8	10	14	16	20

- Q.3(b) Obtain the equation of regression line of Y on X for the following data, and hence estimate the value of Y for X=75. [5]

X	65	66	67	67	68	69	70	72
Y	67	68	65	68	72	72	69	71

- Q.4(a) Define Central Limit Theorem. If $\{X_1, X_2, \dots, X_n\}$ is a random sample from $N(\mu, \sigma^2)$ population, obtain the sampling distribution of \bar{X} . [5]
Q.4(b) Define the terms- (i) Type I error, (ii) Type II error, and (iii) Power of Test. [5]

- Q.5(a) The heights (in inches) of 10 candidates of a class are found to be: 70, 67, 62, 68, 61, 68, 70, 64, 64, 66. Is it reasonable to believe that the average height in the class is greater than 64 inch. Test this at 5 % level of significance. (Given: $t_{0.05,9} = 1.83$). [5]

- Q.5(b) Describe the test procedure for testing the null hypothesis $H_0 : \sigma^2 = \sigma_0^2$ in a random sample $\{X_1, X_2, \dots, X_n\}$ of size n from $N(\mu, \sigma^2)$ population, where μ is known. [5]

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