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SEAT No. _____

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SARDAR PATEL UNIVERSITY
BBA (ITM) SEMESTER-III EXAMINATION (4 Years)
TUESDAY, 20TH NOVEMBER,
2018

02.00 P.M. TO 04.00 P.M.

UM03CBBI01: QUANTITATIVE TECHNIQUES FOR MANAGEMENT-I

Total Marks: 60

Note: Graph papers & Log table will be provided on request.

- Q.1 [A] What is primary data? Explain questionnaire method of data collection. [7]
 [B] Marks of 60 students in statistics are given below. Prepare a frequency distribution with equal class interval 10 and containing 40-50 as one of the class. [8]

40	25	42	45	43	55	51	46	36	24	44	55	51	46	65
28	18	05	26	17	09	13	25	36	44	56	14	18	39	04
41	43	38	26	32	59	49	53	27	13	37	06	51	19	29
01	41	33	39	73	36	35	33	63	46	11	66	50	19	58

OR

- Q.1 [A] Distinguish: primary and secondary data. List out sources of secondary data. [7]
 [B] Construct a frequency distribution with class interval 5 and containing 40-44 as one of the class. Also find less than and more than cumulative frequency. [8]

46	31	45	42	53	27	39	28	41	44
49	45	44	47	50	50	51	42	53	52
32	33	35	36	26	38	39	44	42	45
43	32	47	51	54	45	40	37	36	43

- Q.2 [A] Explain Measures of central tendency and dispersion and list out their measures. [7]
 [B] Given below is the distribution of profits (in '000 Rs.) earned by 120 retail grocery shops in a city. Find median, Q_3 , D_4 and P_{67} for the following frequency distribution. [8]

Profits	10-20	20-30	30-40	40-50	50-60	60-70	70-80	80-90
No. of Shops	5	12	18	27	30	18	8	2

OR

- Q.2 [A] Find the mean and standard deviation from the following frequency distribution. [7]

Class	10-20	20-30	30-40	40-50	50-60	60-70	70-80
Freq.	9	8	11	13	10	3	1

- [B] Find the missing frequencies if $N=100$ and Mode = 24. [8]

Expenditure(Rs. '000)	0-10	10-20	20-30	30-40	40-50
No. of persons	14	a	27	b	15

- Q.3 [A] Define correlation. Explain types of correlation and scatter diagram method. [7]

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(P.T.O)

[B] Calculate Karl Pearson's coefficient of correlation.

X	9	7	5	10	4	5	3	2
Y	45	42	41	41	30	34	25	20

[8]

OR

Q.3 [A] The rank correlation coefficient for 10 pairs is 0.3. Later on it was found that difference in ranks of one pair was misread as 9 instead of 6. Find the correct value of correlation coefficient. [7]

[B] The rank of the same 10 students in two subjects A and B are given below. Two numbers within the brackets denoting the ranks of the same students in A and B respectively. (1, 9), (2, 7), (3, 3), (4, 6), (5, 4), (6, 8), (7, 10), (8, 1), (9, 5), (10, 2). Use Spearman's formula to find the rank correlation coefficient. [8]

Q.4 [A] What is LPP? Give the mathematical structure of LPP. [4]

[B] A firm manufactures two types of products A and B and sells them at a profit of Rs.2 on type A and Rs.3 on type B. Each product is processed on two machines G and H. Type A requires one minute of processing time on G and 2 minutes on H, type B requires one minute on G and one minute on H. The machine G is available for not more than 6 hours and 40 minutes while machine H is available for 10 hours during one working day. Formulate the problem as a linear programming problem. [4]

[C] Solve the following LPP by Graphical method. [7]

$$\begin{aligned} \text{Maximize } Z &= 3x_1 + 2x_2 \\ \text{Subject to } x_1 + x_2 &\leq 3, \quad 5x_1 + x_2 \leq 8, \quad 3x_1 + 6x_2 \leq 12; \\ x_1 &\geq 0, \quad x_2 \geq 0. \end{aligned}$$

OR

Q.4 [A] Solve the following LPP by using graphical method [7]

$$\begin{aligned} \text{Maximize } Z &= x_1 + 4x_2 \\ \text{Subject to } x_1 + x_2 &\leq 5, \quad 2x_1 + 5x_2 \leq 10, \quad x_1 + 2x_2 \leq 16; \quad x_1 \geq 0, x_2 \geq 0 \end{aligned}$$

[B] Solve the following LPP by using Simplex method [8]

$$\begin{aligned} \text{Maximize } Z &= 10x_1 + 7x_2 \\ \text{Subject to } x_1 + x_2 &\leq 35, \quad 4x_1 + x_2 \leq 30, \quad x_1, x_2 \geq 0 \end{aligned}$$

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