2101E1229

Candidate's Seat No :_____

MBA (SCM) Sem.-1 Examination

FC-105

Q & MT

Time : 2-30 Hours] **January-2025** **[Max. Marks : 70**

Q-1 **A)** Write a note on measures of dispersion and calculate Median, Mode, S D and co-efficient of skewness from the following data : **14**

Weights in Kg.	45-50	50-55	55-60	60-65	65-70	70-75	70-75
Number of persons	2	4	12	22	30	25	10

Q-2

A) (1) Fit a Poisson distribution to the following data : **10**

Number of death:	0	1	2	3	4
f	122	46	23	8	1

(Given that $e^{-0.6} = 0.5488$)

(2) A coin is tossed 10 times. Assuming the coin to be unbiased, what is the probability of getting (i) 4 heads? (ii) at least 4 heads? **04**

OR

B) (1) Three Hundred digits were chosen at random from set of tables. The frequencies of digits were as follows **10**

Digits	0	1	2	3	4	5	6	7	8	9
Frequency	28	29	33	31	26	35	32	30	31	25

Using x^2 – test assess the hypothesis that the digits were distributed in equal numbers in the table. (The 5% value of χ^2 for 9 degree of freedom is 16.92)

(2) In a sample of 500 workers of a factory, the mean wage and SD of wages are found to be ₹ 500 and ₹ 48 respectively. Find the number of workers having wages:
(i) more than ₹ 600 (ii) less than ₹ 450
(Under standard normal curve area between 0 and 2.083 is 0.4812 and between 0 and 1.042 is 0.3508)

(P.T.O)

E/229-2

Q-3 **A)** Marks of 8 students in Mathematics and statistics are given as: **14**

Mathematics:	80	75	76	69	70	85	72	68
Statistics:	85	65	72	68	67	88	80	70

Find the regression lines. When marks of a student in Mathematics are 90, what are his most likely marks in statistics?

OR

B) (1) For the variables x and y, the regression equations are given as **10**
$7x - 3y - 18 = 0$ and $4x - y - 11 = 0$

(i) Find the arithmetic means of x and y.

(ii) Identify the regression equation of y on x.

(iii) Compute the correlation coefficient between x and y. Given the variance of x is 9, find the SD of y.

(2) For a number of towns, the coefficient of rank correlation between the people living below the poverty line and increase of population is 0.50. If the sum of squares of the differences in ranks awarded to these factors is 82.50, find the number of towns. **04**

Q-4 **A)** A company has factories at A, B, C which supply warehouses at D, E, F and G. Monthly factory capacities are 160, 150 and 190 units respectively. Monthly warehouse requirements are 80, 90, 110 and 160 units respectively. Unit shipping costs are given in Table. Determine the **optimum** distribution for this company to minimize shipping cost. **14**

Unit shipping cost

To ↓ From→	D	E	F	G
A	42	48	38	37
B	40	49	52	51
C	39	38	40	43

OR

B) Solve the given linear programming problem graphically:
Mininize : $Z = 5x + 7y$ subject to following constraints

$x + y \leq 4$

$3x + 8y \leq 24$

$5x + 2y \geqq 10$

$x, y \geqq 0$

Q-5 **A)** Write a note on : Shortest path routing and Distance Vector routing **14**

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