USN [ ][ ][ ][ ][ ][ ][ ][ ][ ][ ]   **16/17MBA14**

First Semester MBA Degree Examination, July/August 2021
Quantitative Methods

Time: 3 hrs.   Max. Marks:80

Note: *Answer any FIVE full questions.*

1   a. What is Merge and Boosting in Networking?   (02 Marks)
    b. The following are the marks in Economics (x) and Statistics (y) of the students. Find the coefficient of 'Rank correlation'.   (06 Marks)

x	43	96	74	38	35	43	22	56	35	80
y	30	94	84	13	30	18	30	41	48	95

    c. The average price of coffee various months in 2005 and 2006 are given below:

Month	Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec
2005	32	40	30	29	42	45	49	35	37	30	29	28
2006	35	49	52	26	25	29	31	45	30	32	27	24

Calculate mean and standard deviation. Also find out in which year the prices are stable.
                                                                                    (08 Marks)

2   a. What do you mean by correlation analysis?   (02 Marks)
    b. Compute the Quartile deviation and its coefficient of quartile deviation.   (06 Marks)

Income	Less than 50	50-70	70-90	90-110	110-130	130-150	150 & above
No. of person	54	100	140	300	230	125	51

    c. Find the initial basic feasible solution using VAM method.   (08 Marks)

Age group

Media	13-18	19-25	26-35	36 & above	Available
TV	12	7	10	10	40
Radio	10	9	12	10	30
Magazines	14	12	9	12	20
Required	30	25	15	10	

3   a. What do you mean by decision tree?   (02 Marks)
    b. The probability that a bomb dropped on a bridge, will hit the bridge is 0.5. Eight bombs are dropped on the bridge. Find the probability that:
        (i)   All the bombs hit the bridge
        (ii) More than 1 bomb hit the bridge   (06 Marks)
    c. Calculate coefficient of correlation between rainfall and agricultural production through Karl's Pearson's coefficient of correlation method.   (08 Marks)

Rain fall	22	24	26	28	30	32	34
Agri. Production	40	36	25	50	48	46	38

4   a. If x is a Poisson variate such that $p(x = 1) = p(x = 2)$, find the mean.   (02 Marks)
    b. Solve the following transportation problem by (NWCM) North West Corner Method.

To \ From	W_1	W_2	W_3	W_4	Availability
F_1	30	25	40	20	100
F_2	29	26	35	40	250
F_3	31	33	37	30	150
Required	90	160	200	50	500

                                                                                    (06 Marks)
    c. Explain different types of decision making environment.   (08 Marks)

5 a. State Baye's theorem. **(02 Marks)**
  b. From the following data find the regression equation and calculate the value of y when x is 10.

	x	y
Mean	20	28
S.D	2.4	3
r	0.8	

(06 Marks)

  c. Mean life of electric bulb manufactured by a firm is 1200 hours. The standard deviation in 200 hrs. In a lot of 10000 bulbs, how many bulbs are expected to have life more than 1050 hrs. (Normal distribution area under 0 to 0.75 = 0.2734) **(08 Marks)**

6 a. Define the condition when binomial distribution will be converted to Poisson distribution. **(02 Marks)**
  b. State and explain the difference between CPM and PERT. **(06 Marks)**
  c. Details of the project is as below:

Activity	1–2	1–3	2–4	3–4	3–5	4–9	5–6	5–7	6–8	7–8	8–10	9–10
Time	4	1	1	1	6	5	4	8	1	2	5	7

  (i) Construct network and find the critical path.
  (ii) Find earliest and latest expected time. **(08 Marks)**

7 a. Mention the features of normal distribution. **(02 Marks)**
  b. Find the regression equation x on y from the following data: **(06 Marks)**

x	27	32	39	41	47	52	61
y	18	35	24	37	23	27	47

  c. Activity predecessor time estimates (weeks).

Activity	Preceding Activity	t_o	t_m	t_p
A	-	2	3	10
B	-	2	3	4
C	A	1	2	3
D	A	4	6	14
E	B	4	5	12
F	C	3	4	5
G	D, E	1	1	7

  (i) Find expected duration of project.
  (ii) What is the variance and standard deviation of the project? **(08 Marks)**

8 Firm manufacturing two products A and B. It uses three machines M_1, M_2 and M_3 for manufacturing.
  Product A requires 12, 4 and 2 hrs of M_1, M_2 and M_3 respectively.
  Product B required 6, 10 and 3 hrs of M_1, M_2 and M_3 respectively.
  M_1, M_2 and M_3 are available for only 6000, 4000 and 1800 hrs.
  Profit from each unit of product A is Rs.400 and that of B is Rs.1000.
  Formulate an LPP and maximize. **(16 Marks)**

* * * * *