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14MBA14

First Semester MBA Degree Examination, June/July 2019
Business Analytics

Time: 3 hrs. Max. Marks:100

Note: Use of normal distribution table is allowed mention.

SECTION – A

Note: Answer any FOUR questions from Q.No.1 to Q.No.7.

1 Mention the various measures of central tendency. **(03 Marks)**

2 What are the assumptions in LPP? **(03 Marks)**

3 List out the three types of decision making environment. **(03 Marks)**

4 What is factor analysis? **(03 Marks)**

5 Define master data management. **(03 Marks)**

6 What do you mean by unbalanced transportation problem? **(03 Marks)**

7 Differentiate between merge and burst events. **(03 Marks)**

SECTION – B

Note : Answer any FOUR questions from Q.No.1 to Q.No.7.

1 What is dispersion? List out the various measures of studying dispersion and also explain absolute and relative measures of dispersion. **(07 Marks)**

2 Briefly explain the applications of business analytics in business. **(07 Marks)**

3 The score of two batsmen A and V in ten innings during a certain season are given below. Find which of the 2 batsmen A or B is more consistent in scoring? **(07 Marks)**

A	32	28	47	63	71	39	10	60	96	14
B	19	31	48	53	67	90	10	62	40	80

4 Calculate the coefficient of correlation for the ages of husband and wives. **(07 Marks)**

Ages of husband (years)	23	27	28	29	30	31	33	35	36	39
Ages of wives (years)	18	22	23	24	25	26	28	29	30	32

5 A standard weight of a special purpose brick is 5kg and it contains two ingredients B_1 and B_2. B_1 costs Rs.5/kg and B_2 costs Rs.8/kg. Strength considerations dictate that the brick contains not more than 4kg of B_1 and minimum of 2kg of B_2. Formulate the above problem as a LP model. **(07 Marks)**

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

6 Solve the assignment problem given below for optimal solution using HAM. **(07 Marks)**

Worker	Job			
	A	B	C	D
1	45	40	51	67
2	57	42	63	55
3	49	52	48	64
4	41	45	60	55

7 Following table gives the activities and time duration of a project. Draw network and final critical path. Also find the project completion time. **(07 Marks)**

Activity	1-2	1-3	2-4	2-5	3-5	5-6	4-6
Days	4	3	2	7	6	2	4

SECTION – C

Note : Answer any FOUR questions from Q.No.1 to Q.No.7.

1 Find the value of mean, median and mode from the data given below: **(10 Marks)**

Weight (in kg)	93-97	98-102	103-107	108-112	113-117	118-122	123-127	128-132
Number of students	3	5	12	17	14	6	3	1

2 Briefly explain the nature of decision models. **(10 Marks)**

3 Differentiate between PERT and CPM. **(10 Marks)**

4 Solve the LPP by graphical method,
Maximize $Z = 100x_1 + 40x_2$
Subject to $5x_1 + 2x_2 \leq 1000$
$3x_1 + 2x_2 \leq 900$
$x_1 + 2x_2 \leq 500$
$x_1, x_2 \geq 0$ **(10 Marks)**

5 The following table gives the number of days in a 50 day period during which automobile accidents occurred in a city. **(10 Marks)**

Number of accidents	0	1	2	3	4
Number of days	21	18	7	3	1

Fit a Poisson distribution ($e^{-0.9} = 0.4066$).

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6 Determine an IBFS to the following transportation problem using N.W.C.M and L.C.M. **(10 Marks)**

	D_1	D_2	D_3	D_4	Supply
O_1	6	4	1	5	14
O_2	8	9	2	7	16
O_3	4	3	6	2	5
Required	6	10	15	4	35

7 A small project is composed of seven activities whose time estimates are listed in the table as follows:

Activity	Estimated duration (weeks)		
	Optimistic	Most likely	Pessimistic
1-2	1	1	7
1-3	1	4	7
2-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

a. Draw the project network.
b. Find the critical path and expected duration of the project.
c. What is the probability that the project will be completed i) 4 weeks earlier than expected; ii) 4 weeks later than expected. **(10 Marks)**

SECTION – D
(Compulsory)

8 A city corporation has decided to carryout road repairs on 4 main areas of the city. The government has agreed to make a special grant of Rs.50 lakh towards the cost with a condition that the repairs to be done at the lowest cost and quick time. If the conditions warrant, a supplementary token grant will also be considered favourably. The corporation has floated tenders and five contractors have sent in their bids. In order to speed up work, one road will be awarded to only one contractor. **(20 Marks)**

Contractors/Road	Cost of Repairs (Rs. in lakh)			
	R_1	R_2	R_3	R_4
C_1	9	14	19	15
C_2	7	17	20	19
C_3	9	18	21	18
C_4	10	12	18	19
C_5	10	15	21	16

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i) Find the best way of assigning the repair work to the contractors and the cost.
ii) If it is necessary to seek supplementary grants, then what should be the amount sought?
iii) Which of the five contractors will be unsuccessful in the bid?

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