USN ☐☐☐☐☐☐☐☐☐☐   **14MBA14**

First Semester MBA Degree Examination, June/July 2017
Business Analytics

Time: 3 hrs.   Max. Marks:100

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

1   What do you mean by correlation? Mention any four uses of it.   **(03 Marks)**

2   What is an unbalanced transportation problem? Given an example.   **(03 Marks)**

3   What is Poisson distribution? Write Poisson formula.   **(03 Marks)**

4   Explain looping and dangling errors in network.   **(03 Marks)**

5   What is decision theory? Write any four benefits of decision tree.   **(03 Marks)**

6   What is discriminant analysis?   **(03 Marks)**

7   What is cluster analysis?   **(03 Marks)**

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

1   Explain the basic difference between PERT and CPM.   **(07 Marks)**

2   Briefly explain the steps of decision making process.   **(07 Marks)**

3   What is data warehousing? Explain advantages and disadvantages of data warehousing.   **(07 Marks)**

4   Solve the following LPP by graphical method:
$Z_{max} = 100x_1 + 40x_2$
Subject to constraints, $5x_1 + 2x_2 \leq 1000$
$3x_1 + 2x_2 \leq 900$
$x_1 + 2x_2 \leq 500$ and $x_1, x_2 \geq 0$ **(07 Marks)**

5   The probability that a watch manufactured by a company will be defective is 1/10. If 12 such watches are manufactured, find the probability that
(i)   Exactly two watches will be defective
(ii)   Atleast two watches will be defective
(iii)   None will be defective.   **(07 Marks)**

6   Using the formula $r = \dfrac{\sigma_x^2 + \sigma_y^2 - \sigma_{(x-y)}^2}{2\sigma_x \sigma_y}$, find r from the following table:

x :	1	2	3	4	5	6	7
y :	4	6	9	10	12	10	15

    (07 Marks)

7   The following table gives the activities in a construction project:

Activity	A	B	C	D	E	F	G
Immediate Predecessor	-	-	-	A	C	A	D, B, E
Time (days)	4	6	2	5	2	7	4

a.   Draw a network diagram
b.   Determine critical path and project duration.   (07 Marks)

SECTION – C

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

1   The following table shows the jobs of a network along with their time estimation in days.

Job	1 - 2	1 - 3	1 - 4	2 - 5	3 - 5	4 - 6	5 - 6
t_0	1	1	2	1	2	2	3
t_m	1	4	2	1	5	5	6
t_p	7	7	8	1	14	8	15

a.   Draw the network diagram.
b.   Find the expected duration and variance of each activity. What is the expected project length and project standard deviation?
c.   Calculate the probability of completing the project by 4 days earlier than expected and not more than 4 days later than expected.
Note : $Z = -1.333$ is 9.18% probability
$Z = +1.333$ is 90.82% probability
(From the Normal distribution table)   (10 Marks)

2   Solve the following assignment problem by HAM.   (10 Marks)

Jobs

Men		J_1	J_2	J_3	J_4
	1	12	30	21	15
	2	18	33	9	31
	3	44	25	24	21
	4	23	30	28	14

3   For the regression lines $4x - 5y + 33 = 0$ and $20x - 9y = 107$
(i) Mean values of x and y   (ii) Correlation coefficient   (iii) variance of 'y' given that the variance of 'x' is 9.   (10 Marks)

4   A project has the following time schedule:

Activity	1-2	1-3	2-4	3-4	3-5	4-9	5-6	5-7	6-8	7-8	8-9	8-10	9-10
Time in weeks	4	1	1	1	6	5	4	8	1	2	1	8	7

Construct a network diagram and compute
(i) Obtain early and late start time and completion times.
(ii) Determine the critical path and its duration.
(iii) Determine the total float for each activity.   (10 Marks)

5   The frequency of accidents per shift in a factory is shown in the following table:

Accidents per shift	0	1	2	3	4	Total
Frequency	192	100	24	3	1	320

Calculate the mean number of accidents per shift. Find the corresponding Poisson distribution.   (10 Marks)

6   Explain the types of decision making environment.   **(10 Marks)**

7   Explain the classification of clustering procedure.   **(10 Marks)**

SECTION – D
(Compulsory)

8   Solve the transportation problem by using VAM for feasible solution. Find the optimal solution using MODI method.

		Per unit cost (₹)			
		Market			
		A	B	C	D
	X	13	7	19	0
Ware House	Y	17	18	15	7
	Z	11	22	14	5

Activity in warehouse	Demand in the market
X : 200 units	A : 180 units
Y : 500 units	B : 320 units
Z : 300 units	C : 100 units
	D : 400 units

(20 Marks)

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