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

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

(07 Marks)

Important Note : 1. On completing your answer 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.



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

- Draw a network diagram
- 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

- Draw the network diagram.
- Find the expected duration and variance of each activity. What is the expected project length and project standard deviation?
- 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			
		$J_1$	$J_2$	$J_3$	$J_4$
Men	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

- Obtain early and late start time and completion times.
- Determine the critical path and its duration.
- 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)



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- 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
Ware House	X	13	7	19	0
	Y	17	18	15	7
	Z	11	22	14	5

Activity in warehouse

X : 200 units  
Y : 500 units  
Z : 300 units

Demand in the market

A : 180 units  
B : 320 units  
C : 100 units  
D : 400 units

(20 Marks)

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