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14MBA14

First Semester MBA Degree Examination, Dec.2016/Jan.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 Which is the good measure of central tendency? Give any two reasons. **(03 Marks)**

2 What is exponential distribution? Write its p.d.f (probability density function). **(03 Marks)**

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

4 What is a decision tree? What are the types of decision trees? **(03 Marks)**

5 Write a note on Isoprofit line. **(03 Marks)**

6 What is dummy activity? **(03 Marks)**

7 What is the scope of analytics in Business? **(03 Marks)**

SECTION - B

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

1 What is 'Decision theory'? Discuss the steps involved in decision making process. **(07 Marks)**

2 The following distribution gives the pattern of overtime work done by 100 employees of a company. Find the mean and median

Overtime (hrs)	10 – 15	15 – 20	20 – 25	25 – 30	30 – 35	35 – 40
Number of employees	11	20	35	20	8	6

(07 Marks)

3 Describe the procedure for drawing a CPM network. **(07 Marks)**

4 The mean and standard deviation of the wages of 1,000 workers engaged in a factory are Rs. 1200 and Rs 400 respectively. Assuming the distribution to be normal, estimate
   i) Percentage of workers getting wages above Rs 1600.
   ii) Number of workers getting wages between Rs 600 and Rs 900.

The areas under normal curve for different Z are given below.

Z	0.5	0.75	1	1.5
Area	0.1915	0.2734	0.3413	0.4332

(07 Marks)

5 What is factor analysis? Briefly explain exploratory and confirmatory factor analysis. **(07 Marks)**

6 Discuss the different types of decision models. **(07 Marks)**

7 Solve the following LPP graphically

Maximize $Z = 10x_1 + 15x_2$

Subject to $2x_1 + x_2 \leq 26$

$2x_1 + 4x_2 \leq 56$

$x_1 - x_2 \geq -5$

$x_1, x_2 \geq 0.$

(07 Marks)

SECTION - C

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

1 The following data gives the prices X and Y of shares A and B respectively. Compute the coefficient of variation of X and Y and state which is more stable in value.

Price of share A	(X)	55	54	52	56	58	52	50	51	49
Price of Share B	(Y)	108	107	105	106	107	104	103	104	101

(10 Marks)

2 The following data relate to age of employees and the number of days they reported sick in a month. Calculate Karlpearson's coefficient of correlation and interpret it. **(10 Marks)**

Age (yrs)	30	32	35	40	48	50	52	55	57	61
Sick days	1	0	2	5	2	4	6	5	7	8

3 Explain the following brief :

i) Regression ii) factorial designs. **(10 Marks)**

4 Solve the following assignment problem and obtain the minimum cost at which all the jobs can be performed. **(10 Marks)**

	Job (cost in '00 Rs				
Worker	1	2	3	4	5
A	25	18	32	20	21
B	34	25	21	12	17
C	20	17	20	32	16
D	20	28	20	16	27

5 A project consists of nine activities whose time estimates (in weeks) and other characteristics are given below : **(10 Marks)**

Activity	Preceding Activity/lies	Time estimate (Weeks)		
		Most optimistic	Most likely	Most pessimistic
A	-	2	4	6
B	-	6	6	6
C	-	6	12	24
D	A	2	5	8
E	A	11	14	23
F	B, D	8	10	12
G	B, D	3	6	9
H	C, F	9	15	27
I	E	4	10	16

i) Show the PERT network for the project.

ii) Indentify the critical activitics and find the expected project completion time and its variance.

iii) If the project is required to be completed by December 31 of a given year and the manager wants to be 95% sure of meeting the deadline, when he should start the project work. Given $P(0 < Z < 1.645) = 0.45$.

6 The probability that a pen manufactured by a company will be defective is $\frac{1}{10}$. If 12 such pens are manufactured, using binomial distribution find the probability that.

i) Exactly two will be defective
ii) Atleast 3will be defective
iii) Atmost 3 will be defective. **(10 Marks)**

7 Write a short note on the following :

i) Data warehousing
ii) Linear programming
iii) Baye,s theorem
iv) Poisson distribution. **(10 Marks)**

SECTION - D
CASE STUDY – [Compulsory]

Solve the following transportation problem for maximum profit.

Ware house	Per unit profit (Rs) Market			
	A	B	C	D
X	12	18	6	25
Y	8	7	10	18
Z	14	3	11	20

(20 Marks)

Availability at ware houses			Demand in the market		
X	:	200units	A	:	180 units
Y	:	500 units	B	:	320 units
Z	:	300 units	C	:	100 units
			D	:	400 units

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