

# CBCS SCHEME



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16/17MBA14

## First Semester MBA Degree Examination, Feb./Mar. 2022

### Quantitative Methods

Time: 3 hrs.

Max. Marks:80

**Note: 1. Answer any Four questions from Q.No. 1 to Q.No. 7.  
2. Question No. 8 is compulsory.**

- 1 a. Define Statistics. (02 Marks)  
b. Discuss the various measures of Central tendencies. (06 Marks)  
c. Calculate the mean, median and mode for the following data pertaining to marks in statistics. There are 80 students in a class and the test is of 140 marks. (08 Marks)

Marks more than	0	20	40	60	80	100	120
No. of Students	80	76	50	28	18	9	3

- 2 a. What is Correlation? (02 Marks)  
b. Use method of least square to determine sales for the Year 2017. Following data is given :

Years	2012	2013	2014	2015	2016
Sales of Refrigerator	100	110	130	125	160

- (06 Marks)  
c. A Company's past records contain the following data relating to sales revenue and expenditure on advertisements for 6 years as follows :

Year	Sales Revenue (Rs Crores)	Advertising Expenditure (Rs Crores)
2011	125	15
2012	132	16
2013	145	20
2014	150	21
2015	160	23
2016	170	25

Calculate the appropriate regression equation and estimate the sales in the next year. When the advertisement expenses are budgeted as Rs 30 Crores. (08 Marks)

- 3 a. What is Regression Analysis? (02 Marks)  
b. A Company wanted to assess the consistency between two HRD executives who were to recruit MBA Students for summer placements. They were asked to assess the 12 trainee executives recruited from the last batch and give their rankings. The rankings given by the two executives are as follows :

Trainee Executives	Executive 1	Executive 2
1	1	4
2	11	12
3	8	11
4	2	2
5	12	5
6	10	10
7	3	1
8	4	3
9	7	9
10	5	8
11	6	6
12	9	7

Find the Correlation coefficient and comment on the result.

(06 Marks)



- c. Find Karl Pearson's coefficient of correlation from the following series of marks secured by 10 students in class test in Mathematics and Statistics. (08 Marks)

Marks in Mathematics	45	70	65	30	90	40	50	75	85	60
Marks in Statistics	35	90	70	40	95	40	60	80	80	50

- 4 a. What are Decision Trees? (02 Marks)  
 b. Calculate Standard deviation and Coefficient of variation from the following data :

Age under (in year)	10	20	30	40	50	60	70	80
Number of Persons dying	15	30	53	75	100	110	115	125

Here total number of persons dying is 125. (06 Marks)

- c. Solve the following problem by using Graphical method.

Minimize  $Z = 3x_1 + 5x_2$

Subject to  $-3x_1 + 4x_2 \leq 12$

$2x_1 + 3x_2 \geq 12$

$2x_1 - x_2 \geq -2$

and  $x_1 \leq 4$  ;  $x_2 \geq 2$  ;  $x_1, x_2 \geq 0$ . (08 Marks)

- 5 a. Write Poisson formula with Mean and Variance. (02 Marks)  
 b. Explain what do you mean by Decision Making :  
 i) Under certainty ii) Under uncertainty. (06 Marks)  
 c. Draw a network corresponding to the following information :

Activity	1-2	1-3	2-6	3-4	3-5	4-6	5-6	5-7	6-7
Duration	4	6	8	7	4	6	5	19	10

- i) Draw a network ii) Obtain early and late start time and completion time  
 iii) Determine the critical path. (08 Marks)

- 6 a. Define Random Variable with example. (02 Marks)  
 b. Determine an IBFS to the following transportation problem using NWCR.

Origin / Destination	D <sub>1</sub>	D <sub>2</sub>	D <sub>3</sub>	D <sub>4</sub>	Supply
01	6	4	1	5	14
02	8	9	2	7	16
03	4	3	6	2	5
Demand	6	10	15	4	35

- c. What is "Decision Theory"? Explain the steps of Decision Making process. (08 Marks)

- 7 a. What are the advantages of Critical Path Method? (02 Marks)  
 b. Find Mode for the continuous series.

Class	0-9	10-19	20-29	30-39	40-49	50-59	60-69
Frequency	2	5	3	4	10	6	2

- c. Discuss the 4 project scheduling techniques. (08 Marks)

8 **CASE STUDY (Compulsory) :**

A small maintenance project contains of the following jobs whose precedence relationships are given below :

Job	1-2	1-3	2-3	2-5	3-4	3-6	4-5	4-6	5-6	6-7
Duration days	15	15	3	5	8	12	1	14	3	14

Find the floats for each activity and find the critical path and the total project duration. (16 Marks)

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