DN-411

6200 50/6/30/30

January 2020
Master of Business Administration (MBA) Examination

(Full time) (New) First Semester
FT-102C : QUANTITATIVE TECHNIQUES

Time 3 Hours] [Max. Marks 80

Note : Attempt any five questions with a minimum of two questions from each section. All questions carry equal marks.

Section A

1. A company studies the product preferences of 20000 consumers. It was found that each of the product A, B and C was liked by 7020, 6230 and 5980 respectively. All products were liked by 1500. Product a and B were liked by 2580, Product A and C liked by 1200 and Product B and C were liked by 1950. Prove that the study results are not correct.

2. Find the maximum tax revenue from a tax 't' given the following condition :
   Demand $P = 30 - 2x^2$
   Supply $P = 3 + x^2$

3. If the demand function for a commodity is $p = 50 - 2x - x^2$, find the consumer surplus if :
   (i) $p_0 = 3$ (ii) $p_0 = 12$

4. Solve the following system of equation using Cramer's Rule :

$$x - y + z = 1$$
$$-3x + 2y - 3z = -6$$
$$2x - 5y + 4z = 5$$

Section B

5. Two types of batteries are tested for their length of life and following data are obtained :

	No. of Samples	Mean Life (in Hrs)	Variance
Type A	19	600	121
Type B	08	640	144

   (a) Is there any difference in performance of these batteries ?
   (b) Which of them is better and why ?
   (c) What is the Coefficient of Variation for both the batteries ?

6. Calculate the Karl Pearson Coefficient of Correlation for the following ages of husbands and wives at the time of their marriage :

S. No.	Age of Husband	Age of Wives
1	25	22
2	27	24
3	28	26
4	25	21
5	29	28
6	30	28
7	32	33
8	28	25
9	29	27
10	30	30

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7. A husband and wife appear in an interview for two vacancies in the same post. The probability of husband's selection is 1/7 and that of wife's selection is 1/5. What is the probability that :
   (i) Both of them will be selected ?
   (ii) Only one of them will be selected ?
   (iii) None of them will be selected ?

8. Fit a trend to the following data and estimate the sales for 2020 :

Year	2013	2014	2015	2016	2017	2018	2019
Sales (Rs. Lakhs)	80	130	144	138	120	174	190

9. (a) Differentiate between Addition and Multiplicative Models of Time Series.
   (b) Explain construction of Seasonal Indices by ratio to Moving Averages.