M. Sc. (I.T.) Sem. – I (C.B.C.S. Course) (2015 Course) : SUMMER - 2019

SUBJECT: QUANTITATIVE TECHNIQUES

Day: Wednesday
Date: 15/05/2019

S-2019-1352

Time: 02.30 pm to 05.30 pm
Max Marks: 60

N.B.:

1) Question No. 1 is **COMPULSORY.** Attempt any **FOUR** of the remaining six questions.
2) Figures to the right indicate **FULL** marks.
3) Use of **NON-SCIENTIFIC CALCULATOR** is **PERMITTED.**

Q.1 Attempt **ANY FOUR** of the following: - **(20)**

a) State the components of a Time Series and explain any one of them.

b) Explain the term Coefficient of Variation (CV).

c) State the advantages and disadvantages of the Median.

d) Explain Point and Interval Estimates

e) State and explain Central Limit Theorem.

Q. 2 Calculate the Mode and Median of the following frequency distribution: **(10)**

Annual Sale (in Lakhs)	0-10	10-20	20-30	30-40	40-50	50-60
No. of Years	4	16	15	20	7	5

Q. 3 Three machines A, B and C produce respectively 50%, 30% and 20% of the total items of a factory. The percentages of defective outputs of these machines are 3%, 4% and 5% respectively. If an item is chosen randomly and was found to be defective, what is the probability that it was produced by machine A? **(10)**

Q. 4 Calculate Karl Pearson's Coefficient of Correlation from the following data: **(10)**

X	6	8	12	15	18	20	24	28	31
Y	10	12	15	15	18	25	22	26	28

Q. 5 A trader deals in a perishable commodity. Daily demand is a random variable. Records of the past 100 days show the following: **(10)**

Demand (Units)	1	2	3	4	5
No. of Days	10	20	30	30	10

The trader buys the commodity at Rs 10 per unit and sells it at Rs. 15 per unit. Calculate the profit in 10 days by simulating the system. Use the following Random Numbers: 12, 75, 14, 72, 20, 82, 74, 08, 01, 69

P.T.O.

Q. 6 Let the states of nature of Rainfall be R_H, R_M, R_L corresponding to heavy, moderate and low rainfall. The expected profits for different states of nature of three different crops P, Q and R are as shown: **(10)**

Profits (in Rupees)

States of Nature (Prob.) / Crops	R_H (0.2)	R_M (0.3)	R_L (0.5)
P	7000	3500	1000
Q	2500	3500	4000
R	4000	4000	3000

What crop should the landlord plan based on the following criteria?

a) Maximax; b) Maximin; c) Expected Monetary Value (EMV)

Q.7 Calculate the 5-year moving averages of the following data set: **(10)**

Year	2000	2001	2002	2003	2004	2005	2006	2007
Value	130	127	124	135	140	132	129	127
Year	2008	2009	2010	2011	2012	2013	2014	
Value	145	158	153	146	145	164		

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