

M. SC. (I.T.) SEM. – I (C.B.C.S. COURSE) (2015 COURSE) :

WINTER - 2017

SUBJECT: a) QUANTITATIVE TECHNIQUES

Day: **Thursday**
Date: **21/12/2017**

W-2017-0915

Time: **10.00 AM TO 01.00 PM**
Max. Marks: 60

N.B.:

- 1) Attempt any **FIVE** questions.
- 2) Figures to the right indicate **FULL** marks.

Q.1 Write short notes on any **THREE** of the following: **(12)**

- a) Merits and demerits of median
- b) Independent and mutually exclusive events
- c) Confidence interval of proportion
- d) Correlation coefficient

Q.2 The weekly sales and IQ scores of nine salesmen of a company were studied. **(12)**
The data is as follows:

	A	B	C	D	E	F	G	H	I
Salesman IQ score	50	60	50	60	80	50	80	40	70
Sales (in Rs '000)	30	60	40	50	60	30	70	50	60

Calculate the Karl Pearson's correlation coefficient. If the IQ of a salesman is 65, what would be his expected weekly sales?

Q.3 a) What is the necessity of simulation? **(04)**

b) A dentist schedules all his patients for 30 minute appointments. Some of the patients take more or less than 30 minutes depending on the type treatment. **(08)**
The following data shows various categories of work, their probabilities and time actually needed to complete the work.

Category of service	Time Required (minutes)	Probability of Category
Filling	45	0.40
Crown	60	0.15
Cleaning	15	0.15
Extraction	45	0.10
Check up	15	0.20

Simulate the dentist's clinic for four hours and determine the average waiting time for the patients and idle time of the service. Assume that all patients arrive at the clinic exactly at their scheduled arrival time starting from 8.00 A.M. Use the following random numbers 40, 82, 11, 34, 25, 66, 17, 79.

P. T. O.

Q.4 Find the mean and median from the following data: **(12)**

Marks obtained	0-10	10-20	20-30	30-40	40-50	50-60
No. of students	12	18	27	20	17	6

Q.5 The runs scored by two batsmen A and B in ten innings are as follows: **(12)**

Batsman A	10	115	5	73	7	120	36	84	29	52
Batsman B	45	12	76	42	4	50	37	48	13	0

Who is better run getter? Who is more consistent?

Q.6 a) State the concept of Empirical probability. **(04)**

b) A landlord wants to decide on the type of crop to be planted on his farm. The yield largely depends on the amount of the rainfall. He estimates the profits due to the states of the nature and probabilities of rainfall as follows: **(08)**

Crop Type	Estimated Profit Rs. per acre		
	Rain substantial	Rain Moderate	Rain Low
	Prob: 0.2	Prob: 0.3	Prob: 0.5
P	7000	3500	1000
Q	2500	3500	4000
R	4000	4000	3000

Determine the crop he should choose based on Maximax, Maximin and Expected Monetary value Criterion (EMV).

Q.7 a) What do you understand by Hypothesis Testing? Explain with suitable example. **(04)**

b) State the properties and applications of Normal Distribution. **(04)**

c) Explain different measures of dispersion. **(04)**

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