

**(P.G.D.H.R.M.) / P.G.D.F.M. / P.G.D.I.B.M./ P.G.D.M.M. SEM –
I (C.B.C.S.) (2015 COURSE) : WINTER - 2017
SUBJECT : QUANTATIVE TECHNIQUES**

Day : **Friday**
Date : **08/12/2017**

W-2017-1954

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.
- 3) Use of non – programmable calculator is **ALLOWED**.

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

- a) Null and Alternate Hypothesis
- b) Normal Distribution
- c) Merits and Demerits of Mode
- d) Maximin criteria

Q. 2 Calculate the mean and standard deviation from the following data: **(12)**

Marks in Cost Accounting	0-10	10-20	20-30	30-40	40-50	50-60	60-70
No. of Students	5	7	14	12	9	6	2

Q. 3 Calculate Karl Pearson's coefficient of correlation from the following series **(12)**
of marks scored by 10 students in a class test in Mathematics and Statistics.

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

Q. 4 A company has two plants to manufacture scooters. Plant I manufacture 80 % **(12)**
of the scooters and Plant II manufactures 20 %. At Plant I, 85 out of 100
scooters are rated standard quality or better. At Plant II only 65 out of 100
scooters are rated standard quality of better.

- a) What is the probability that scooter selected at random has come from Plant I if it is known that the scooter is of standard quality?
- b) What is the probability that scooter selected at random has come from Plant II if it is known that the scooter is of standard quality?

Q. 5 In a general single channel queuing situation the probability distribution of **(12)**
inter arrival of customers and service times are observed to be as under

Inter Arrival Time (minutes)	Probability	Service Times (minutes)	Probability
2	0.50	1	0.10
4	0.30	2	0.30
6	0.10	3	0.25
8	0.10	4	0.20
		5	0.15

P. T. O.

Simulate the queue for first five arrivals and compute:

- a) Proportion of the time the service in idle.
- b) Average waiting time of customer.

Use following random numbers:

For Inter Arrival Time	11	91	99	57	26
For Service Time	51	70	33	91	67

Q. 6 a) A sample of 100 items gave a mean of 7.4 kg and a standard deviation of 1.2 kg. Find 95 % confidence limits for the population mean. **(06)**

b) A random sample of 500 apples was taken from a large consignment and 65 of them were found to be bad. Obtain 99 % confidence limits for population proportion P. **(06)**

Q. 7 A manager is faced with the problem of choosing one of the three products A, B and C for production. The potential demand (states of nature) for each product may turn out to be poor (S_1) moderate (S_2) or good (S_3). The payoff (in Rs.) for different combinations of products and potential demands is given in the following table. The probabilities of demands being poor moderate and high is 0.3, 0.4 and 0.3 respectively: **(12)**

Product	Potential Demand		
	Poor (S_1)	Moderate (S_2)	High (S_3)
A	-20	200	400
B	-50	-100	600
C	200	-50	300

Which product the manager should choose for manufacturing based on:

- a) Maximax Criterion
- b) Maximin Criterion
- c) Expected Monetary Value Criterion

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