M.Com DEGREE EXAMINATION,APRIL 2019
I Year II Semester
Quantitative Techniques for Business Decisions

Time : 3 Hours **Max.Marks :75**

Section A $(10 \times 2 = 20)$ Marks

Answer any **TEN** questions

1. Define hypothesis.
2. What is a sampling error?
3. What is a Linear Programming Problem?
4. Describe an assignment problem.
5. What is interference?
6. Define transition probability matrix.
7. What are the various types of queuing?
8. What is random sampling?
9. Write the equation of regression lines.
10. Write the formulae for Pearson's chi-square test.
11. Three coins are tossed. Find the probability of getting exactly two heads.
12. A perfect dice is tossed twice. Find the probability of getting a total of 9.

Section B $(5 \times 5 = 25)$ Marks

Answer any **FIVE** questions

13. Explain the process of testing a hypothesis.
14. Differentiate between PERT and CPM.
15. A bag contains 4 white and 6 black balls. Two balls are drawn at random. What is the probability that (a) both are white and (b) both are black.
16. The probability distribution of monthly sales of an item is as follows:

Monthly sales(units)	0	1	2	3	4	5	6
probabilities	.01	.06	.25	.30	.22	.10	.06

The cost of carrying inventory (unsold during the month) is Rs. 30 per unit per month and the cost of unit shortage is Rs. 70. Determine optimum stock to minimise expected cost.

17. A random sample of 200 tins of coconut oil gave an average weight of 4.95 kgs with standard deviation of 0.21 kg. Do we accept the hypothesis of net weight 5 kgs per tin at 15 levels?

18. Calculate the coefficient of correlation between x and y from the following data:

x	1	3	5	8	9	10
y	3	4	8	10	12	11

19. In a laboratory experiment on correlation research study, the equations of the two regression lines were found to be 2x-y+1=0 and 3x-2y+7=0. Find the means of x and y. Also work out, the values of the regression coefficient of correlation between the two variables x and y

Section C $(2 \times 15 = 30)$ Marks

Answer any **TWO** questions

20. A biased coin is known to come up with heads twice as often as tails. The coin is tossed 3 times. Let X be the number of heads that appear. Find the probability function and the distribution function of X.

21. Time taken by workers in performing a job are given below:

Method I	20	16	26	27	23	22	
Method II	27	33	42	35	32	34	38

Test whether there is any significant difference between the variance of time distribution.

22. To test the efficiency of a new drug a controlled experiment was conducted wherein 300 patients were administered the new drug and 200 other patients were not given the drug. The patients were monitored and the results were obtained as follows:

	Cured	Condition worsened	No effect	total
Given the drug	200	40	60	300
Not given the drug	120	30	50	200
Total	320	70	110	500

Use chi-square test to find the effect of the drug.

23. Five jobs 1,2,3,4 and 5 are to be assigned to five persons A,B,C,D and E. The time taken (in minutes) by each of them on each job is given below:

	1	2	3	4	5
A	16	13	17	19	20
B	14	12	13	16	17
C	14	11	12	17	18
D	5	5	8	8	11
E	15	3	8	8	10

Work out the optimal assignment and the total minimum time taken.

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