M.Com. DEGREE EXAMINATION,APRIL 2020
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 probability of an event. Give two examples.
2. A coin is tossed twice. Find the probability of getting atleast one head.
3. What is degree of freedom?
4. Define χ^2- statistic
5. A die is thrown 9000 times and a throw of 3 or 4 is observed 3240 times. Show that the die cannot be regarded as an unbiased one.
6. What is cluster analysis?
7. Write short notes on Scatter - diagram method.
8. If $r_12 = 0.86$, $r_13 = 0.65$ and $r_23 = 0.72$. Find the partial correlation coefficient.
9. State the meaning of restricted assignment.
10. Give the meaning of 'unit cost penalty method"?
11. State the rule –saddle point
12. Define Hurwicz criterion

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

Answer any **FIVE** questions

13. Discuss the relation between Binomial, Poisson and Normal distributions?
14. List out the uses of Chi square test (χ^2) - statistic
15. A set of 5 identical coins is tossed 320 times and the number of heads appearing each time is recorded.

No. of heads	0	1	2	3	4	5
Frequency	14	45	80	112	61	8

Test whether the coins are unbiased at 5% level of significance.

16. To study the effects of rainfall on wheat, the following results were obtained.

	Mean	SD
Yield in lbs per acre	800	12
Rainfall in inches	50	2
The coefficient of correlation between yield and rainfall is	0.8	

Estimate the yield when the rainfall is 80 inches.

17. Draw a network and determine the critical path of the project.

Activity	A	B	C	D	E	F	G
Time	4	9	3	8	7	2	5
Predecessors	None	None	A	B	B	D	E

18. A company makes two products (tables and chairs), which must be processed though assembly and finishing departments. Assembly and finishing departments are having 60 hours and 48 hours respectively. If profit is Rs. 8 per table and Rs. 6 per chair, determine the best possible combination of tables and chairs to produce and sell in order to realise the maximum profit.

19. Explain the maximin principle with the following pay-off matrix for player A.

	Player B		
Player A	20	12	15
	11	10	12
	15	11	10

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

Answer any **TWO** questions

20. Describe the procedures of testing of hypothesis?

21. A set of 120 samples of three brands of a certain powder is examined and found to be allocated among four groups (A, B, C and D) as shown under.

Brands	Groups			
	A	B	C	D
I	0	4	8	15
II	5	8	13	6
III	18	19	11	13

Is there any significant difference in brands preference? Answer at 5% level, using one-way ANOVAs.

22. Four jobs can be processed on four different machines, one job on one machine. Resulting profits vary with assignments. They are given below:

	Machines				
		A	B	C	D
Jobs	I	42	35	28	21
	II	30	25	20	15
	III	30	25	20	15
	IV	24	20	16	12

Find the optimum assignment of jobs to machines and the corresponding profit.

23. Following are the records of demand for the past 300 days.

Demand in ('000) units	10	11	12	13	14
Profitability	0.06	0.30	0.40	0.20	0.04

It costs Rs. 15 to make an item which sells for Rs. 20 normally but at the end of the day the surplus has to be disposed at Rs. 10 per item. What is the optimum output? Also find EVPI.