M.Com(A&F) 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. Write a short note on Baye's Theorem.
2. What do you mean by Poisson distribution?
3. Explain Sampling Errors.
4. State the different types of correlation.
5. Define Regression.
6. State the characteristics of chi-square distribution.
7. $\sum dx = 5$; $\sum dy = 4$; $\sum dx^2 = 40$; $\sum dy^2 = 50$; $\sum dxdy = 32$; N = 10; find correlation.
8. What do you mean by discriminant analysis?
9. Explain central limit theorem.
10. What are the advantages of Probability Sampling?
11. Write a note on sample size.
12. What are the different methods to obtain the initial feasible solution in transportation?

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

Answer any **FIVE** questions

13. What is meant by sampling? Explain in detail the non-probability sampling techniques.
14. Five jobs 1,2,3,4 and 5 are 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, work out the optimal assignment and the total minimum time taken.]

	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	5	3	8	8	10

15. Find out the initial feasible solution through North West corner method.

	S1	S2	S3	Availability
W1	5	4	2	6
W2	4	7	6	8
W3	2	5	8	12
W4	8	6	7	4
Requirements	8	10	12	30

16. Calculate Karl Pearson's co-efficient of correlation between the height and weight from the data given below.

Height(Inches)	62	64	67	63	65	66	70
Weight(lbs)	128	124	130	128	125	129	132

17. The Marketing staff of a certain industrial organisation has submitted the following pay-off table, giving profits in million rupees, concerning a certain proposal depending upon the rate of technology advance.

Technological Advance	Decision	
	Accept	Reject
Much	2	3
Little	5	2
None	-1	4

The probabilities are 0.2, 0.5, and 0.3 for much, little and none technological advance respectively. What decision should be taken?

18. From the data given below about treatment of 250 patients suffering from a disease, state whether the new treatment is superior to the conventional treatment:

	No of patients		Total
	Favourable	Not favourable	
New	140	30	170
Conventional	60	20	80
Total	200	50	250

(Given degree of freedom $= 1$, chi-square 5% $= 3.84$)

19. a) If the probability of defective bolts is 0.1 find mean and standard deviation for the distribution of defective bolts in a total of 500.

b) a normal curve has mean $= 20$ and $\sigma = 10$. Find the area between $x_1 = 15$ and $x_2 = 40$.

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

Answer any **TWO** questions

20. Solve the following LPP using Simplex Method

    Max z = $5x_1 + 3x_2$

    $3x_1 + 5x_2 \leq 15$

    $5x_1 + 2x_2 \leq 10$

    $x_1, x_2 \geq 0$

21. Find out from the following

    a) Two regression equation

    b) Co-efficient of correlation

    c) Most likely value of X When Y = 12

    d) Most likely value of Y when X = 22

X	2	4	6	8	10
Y	8	6	10	14	7

22. Two random samples were drawn from two normal populations and their values are

A	66	67	75	76	82	84	88	90	92		
B	64	66	74	78	82	85	87	92	93	95	97

    Test whether two population have the same variance at 5% level of significance (F=3.36) at 5% level for v1 = 10 and v2 = 8

23. To verify whether a course in accounting improved performance, a similar test was given to 12 participants both before and after the course. The original marks recorded in alphabetical order of the participants were 44,40,61,52,32,44,70,41,67,72,53 and 72. After the course, the marks were in the same order 53,38,69,57,46,39,73,48,73,74, 60,and 78. Was the course useful?

    (t=2.201 at 5% for v11)