SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
M.Com.(A&F) - END SEMESTER EXAMINATIONS NOVEMBER - 2023
SEMESTER - I
23PAFCT1002- Quantitative Techniques for Business Decisions

Total Duration : 2 Hrs. 30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Briefly explain about different rules of Probability.
2. Describe the term 'Multivariate Analysis'.
3. A sample of 400 male students is found to have a mean height of 171.38 cms. Can it be reasonably regarded as a sample from a large population with mean height 171.17 cms and standard deviation 3.30 cms?
4. Solve the transportation problem by using North West Corner Rule:

	A	**B**	**C**	$\mathbf{a}_i$
$\mathbf{F}_1$	10	9	8	8
$\mathbf{F}_2$	10	7	10	7
$\mathbf{F}_3$	11	9	7	9
$\mathbf{F}_4$	12	14	10	4
$\mathbf{b}_j$	10	10	8	

5. Write short notes on project evaluation.
6. For a binomial distribution with parameters n = 5, p = 0.3 find the probabilities of getting atleast 3 successes.
7. Four dice were thrown 112 times and the number of times 1, 3 or 5 was thrown were as under:

No. of dices showing 1, 3 or 5	0	1	2	3	4
Frequency	10	25	40	30	7

Find the value of x_2, presuming that all the dice were fair. Also apply x_2 test to test the hypothesis.

Contd...

8. Four different jobs are to be done on four different machines. The following table gives the cost of producing job I in machine J in rupees.

	Machine			
Jobs	**1**	**2**	**3**	**4**
1	5	7	11	6
2	8	5	9	6
3	4	7	10	7
4	10	4	8	3

Assign jobs to machines so that the total cost is minimized.

Section C

I - Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. An executive has to make a decision. He has four alternatives D_1, D_2, D_3, and D_4. When the decision has been made events may lead such that any of the four results may occur. The results are R_1, R_2, R_3 and R_4. Probabilities of occurrence of these results are follows:
R_1 : 0.5; R_2 : 0.2; R_3 : 0.2; R_4 : 0.1.
The matrix of pay-off between the decision and the results is indicated below:

	$\mathbf{R_1}$	$\mathbf{R_2}$	$\mathbf{R_3}$	$\mathbf{R_4}$
$\mathbf{D_1}$	14	9	10	5
$\mathbf{D_2}$	11	10	8	7
$\mathbf{D_3}$	9	10	10	11
$\mathbf{D_4}$	8	10	11	13

Show this decision situation in the form of a decision tree and indicate the most preferred decision and corresponding expecting value.

10. Explain in detail about Cluster and Discriminant Analysis.

11. Two random samples drawn from normal population are

Sample: I	20	16	26	27	23	22	18	24	25	19	16	20
Sample: II	27	33	42	35	32	34	38	28	41	43	30	37

Obtain estimates of variances of the population and test whether the two populations have the same variance.

12. Using LPP method.
Maximize $Z = 50x_1 + 60x_2$
Subject to $2x_1 + 3x_2 \leq 1500$
$3x_1 + 2x_2 \leq 1500$
$x_1 \leq 450$
$x_1, x_2 \geq 0$

II - Compulsory question $(1 \times 10 = 10$ Marks)

13. The following table lists the activities of a main tenance project.

Activity	**Duration (in months}**
1 – 2	2
1 – 3	2
1 – 4	1
2 – 5	4
3 – 6	5
3 – 7	8
4 – 7	3
5 – 8	1
6 – 8	4
7 – 9	5
8 – 9	3

(i) Draw the project network.
(ii) Find the Critical path and duration of the project.
(iii) Suppose we are required to employ a special piece of equipment on activities 1 – 3, 3 – 4, 2 – 5, 5 – 8 and 8 – 9 one at a time, will it affect the duration of the project? Explain.

******