

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 - APRIL 2025

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)

- Three coins are tossed. Find the probability of getting (i) atleast on head, (ii) exactly 2 heads.
- Differentiate between sample size and standard error sampling.
- Write a short note on
(i) multivariate analysis
(ii) discriminant.
- A filling machine is expected to fill 5kg of powder into bags. A sample of 10 bags gave the weights (in kg) 4.7, 4.9, 5.0, 5.1, 5.4, 5.2, 4.6, 5.1, 4.6 and 4.7. Test whether the machine is working properly.
- Values of a variate in two samples are given below.

Sample I	5	6	8	1	12	4	3	9	6	10
Sample II	2	3	6	8	1	10	2	8		

Test the significance of the difference between the two sample means and the two sample variances.

- Solve the following unbalanced assignment problem of minimising total time for doing all the jobs.

Job Operators	1	2	3	4	5
1	6	2	5	2	6
2	2	5	8	7	7
3	7	8	6	9	8
4	6	2	3	4	5
5	9	3	8	9	7
6	4	7	4	6	8

Contd...

7. Solve the following LPP by simplex method

$$\text{Maximise } Z = x_1 + 2x_2$$

$$\text{subject to } x_1 - x_2 \geq 3$$

$$2x_1 + x_2 \leq 10$$

$$x_1, x_2 \geq 0$$

8. The utility data for a network is given below. Determine the total, free independent floats and identify the critical path.

Activity	Duration
0-1	2
1-2	8
1-3	10
2-4	6
2-5	3
3-4	3
3-6	7
4-7	5
5-7	2
6-7	8

Section C

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

9. Two urns contains respectively 10 white, 6 red and 9 black balls and 3 white, 7 red and 15 black balls. One ball is drawn from each urn. Find the probability that (i) both balls are red (ii) both balls are of the same colour.

10. Illustrate the characteristics of standard error.

11. The sales data of an item in six shops before and after a promotional campaign are as under:

Shops	A	B	C	D	E	F
Before Campaign	53	28	31	48	50	42
After Campaign	58	29	30	55	56	45

12. Solve the following transportation problem to maximise profit.

Origin	Profit (Rs.)/ unit Destination				Supply
	1	2	3	4	
A	40	25	22	33	100
B	44	35	30	30	30
C	38	38	28	30	70
Demands	40	20	60	30	

Contd...

II - Compulsory question (1 × 10 = 10 Marks)

13. Ascertain A project has the following characteristic

Activity	Duration	Preceding activities
A	3	-
B	8	-
C	4	A,B
D	2	B
E	1	A
F	7	C
G	5	E,F
H	6	D,F
I	8	G,H
J	9	I

Construct the network and determine all the paths.
Find the critical path and project duration.
