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 - 2022
SEMESTER - I
20PAFCT1003 - Quantitative Techniques for Business Decisions

Total Duration : 3 Hrs. **Total Marks : 60**

Section A

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

1. Define probability and explain its importance in decision making.
2. The life time of electric bulbs for a random sample of 10 from a larger consignment gave the following data:

S.No.	1	2	3	4	5	6	7	8	9	10
Life in '000 hours	4.20	4.6	3.9	4.1	5.2	3.8	3.9	4.3	4.4	5.6

   Can we accept the hypothesis that average life of bulbs is 4,000 hours at 5% level of significance? Also calculate 95% confidence interval for mean life of bulbs.

3. Solve the following transportation problem.

	W1	**W 2**	**W 3**	**Supply**
P 1	7	6	9	20
P 2	5	7	3	28
P 3	4	5	8	17
Demand	21	25	19	65

4. Find the optimal assignment that will result in minimum cost from the following.

	A	**B**	**C**	**D**
1	5	3	2	8
2	7	9	2	6
3	4	6	5	7
4	5	7	7	8

5. Mention the criteria for making the decision under uncertainty.
6. Define sampling and explain its merits.
7. Solve the following graphically
   Max. $Z = 5x_1 + 3x_2$
   Subject to constraints
   $2X_1 + X_2 \leq 1{,}000$, $X_1 \leq 400$, $X_2 \leq 700$
   Where $X_1, X_2 \geq 0$

Contd...

8. Draw a network diagram from the following data:

Name of the activity	Pre -requisite activity	Time estimated (in days)
A	None	2
B	A	3
C	A	4
D	B and C	6
E	None	2
F	E	8

Section B

Part A

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

9. A milkman buys milk at Rs.2 per litre and sells for Rs.2.50 per litre. Unsold milk has to be thrown away. The daily demand has the following probabilities.

Demand	46	48	50	52	54	56	58	60	62	64
Probability	0.01	0.03	0.06	0.1	0.2	0.25	0.15	0.1	0.05	0.06

If each day's demand is independent of previous day's demand, how much litres should be ordered every day.

10. Explain the different methods of sampling.

11. In a test given to two groups of students drawn from two normal populations, the marks obtained were as follows:

Group A	18	20	36	50	49	36	34	49	41
Group B	29	28	26	35	30	44	46		

Examine @ 5% level whether the two populations have the same variance. [F value @ 5% for ndf 8,6 = 4.147]

12. Find the optimal solution for transporting the products at a minimum cost for the following transportation problem with cost structure as follows:

		To			**Availability**
		P	**Q**	**R**	
From	**A**	16	19	12	14
	B	22	13	19	16
	C	14	28	8	12
Requirement		10	15	17	42

Contd...

Part B

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

13. A company is faced with the problem of assigning six different machines to five different jobs. The costs are estimated & given below:

	Jobs				
Machines	**J1**	**J2**	**J3**	**J4**	**J5**
M1	6	2	5	2	6
M2	2	5	8	7	7
M3	7	8	6	9	8
M4	6	2	3	4	5
M5	9	3	8	9	7
M6	4	7	4	6	8

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