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 - NOV'2024
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. Describe the various decisions taken under risk and certainty.
2. Discuss the role of standard error in hypothesis testing.
3. A dietician wishes to mix two types of food in such a way that the Vitamin contents of the mixture contains at least 8 units of Vitamin A and 10 units of Vitamin B. Food I contains 2 units per kg of Vitamin A and 1 unit per kg of Vitamin B while food II contains 1 unit per kg of Vitamin A and 2 units per kg of Vitamin B. It costs Rs.5 per kg to purchase food I and Rs.8 per kg to purchase food II. Formulate this as a linear programming model to minimize cost.
4. In a survey of 200 boys of which 75 were intelligent, 40 had educated fathers; while 85 of unintelligent boys had uneducated fathers. Do these figures support the hypothesis that educated fathers have intelligent boy? Use chi-square test, value of chi square for 1 degree of freedom at 5% level is 3.84.
5. An auto company decided to introduce a new six cylinder car whose mean petrol consumption is claimed to be lower than that of the existing auto engine. It was found that the mean petrol consumption for the 50 cars was 10 km per litre with a standard deviation of 3.5 km per litre. Test for the company at 5% level of significance, whether the claim the new car petrol consumption is 9.5 km per litre on the average is acceptable.
6. 1,000 light bulbs with a mean life of 120 days are installed in a new factory. Their length of life is normally distributed with standard deviation 20 days I) How many bulbs will expire in less than 90 days? II) if it is decided to replace all the bulbs together, what intervals should be allowed between replacement s if not more than 10 percent should expire before replacement?

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7. A Cement factory manager is considering the best way to transport cement from three manufacturing centers, P, W, R to deposits A, B, C,D, and E. The weekly production and demands along transportation costs per tonne are given below:

	A	**B**	**C**	**D**	**E**	**Tonnes**
P	4	1	3	4	4	60
Q	2	3	2	2	3	35
R	3	5	2	4	4	40
	22	45	20	18	30	135

What should be the distribution programme?

8. The following table gives the activities of a construction project and duration (in days)

Activity:	1-2	1-3	2-3	2-4	3-4	4-5
Duration:	20	25	10	12	6	10

Draw the network diagram and find the critical path.

Section C

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

9. Consider a problem of assigning four clerks to four tasks. The times (hours) required to complete the tasks are given below:

	Tasks			
	A	**B**	**C**	**D**
I	4	7	5	6
II	-	8	7	4
III	3	-	5	3
IV	6	6	4	2

Clerk II cannot be assigned to task A and Clerk III cannot be assigned to task B. find the optimum assignment schedules.

10. A project is as follows:

Activity	A	B	C	D	E	F	G
Duration	4	9	3	8	7	2	5
Preceding Activity	-	-	A	B	B	D	E

Construct the network and find the project and the critical path duration.

11. The distribution of typing mistakes committed by a typist is given below: Assuming a Poisson mode, find out the expected frequencies:

No. of Mistakes per page	0	1	2	3	4	5
No. of Pages	142	156	69	27	5	1

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12. A test was given to 5 students chosen at random from the M.Com class of each of the three universities. Their scores were found as follows:

University	**Scores**				
A	90	70	60	50	80
B	70	40	50	40	50
C	60	50	60	70	60

Perform analysis of variance and show if there is any significant difference between the scores of students in the three universities (Given F5%=3.44)

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

13. Critically evaluate the significance of Multi variate analysis in research. Describe the most common methods of multivariate techniques used in quantitative research.

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