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.
B.Com. END SEMESTER EXAMINATIONS NOVEMBER -2023
SEMESTER - II
20UCOAT2002 - Business Statistics and Operations Research-II

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

Section B

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

1. A person is known to hit the target in 3 out of 4 shots. Whereas another person is known to hit the target in 2 out of 3 shots. Find the probability of the target being hit at all when they both try.

2. The mean life time of a sample of 100 fluorescent light bulbs produced by a company in 1570 hours with a standard deviation of 120 hours. The company claims that the average life of the bulbs produced by the company is 1600 hours. Is the claim acceptable? (Test at 5% level)

3. Solve the following Assignment problem

		Machines
		A	**B**	**C**	**D**
	I	42	35	28	21
Jobs	**II**	30	25	20	15
	III	30	25	20	15
	IV	24	20	16	12

4. Write the difference between CPM and PERT.

5. Describe the methods of sampling.

6. A random sample of 20 tyres from a large consignment gave the average life of the tyres as 36,000 km and standard deviation of 4,500 km. Could the sample come from the population with a mean life of 40,000 km? (t-value at 5% level for 19 d.f is 1.73).

7. Find the initial basic feasible solution by North-West corner method.

	W_1	W_2	W_3	W_4	**Supply**
F_1	48	60	56	58	140
F_2	45	55	53	60	260
F_3	50	65	60	62	360
F_4	52	64	55	61	220
Demand	200	320	250	210	

8. Draw a Network diagram for the following project and find its critical path.

Activity	1 - 2	1 - 3	2 - 3	2 − 4	3 − 4	4 - 5
Duration(days)	20	25	10	12	6	10

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks$)$

9. A husband and wife appears in an interview for two vacancies in the same post. The probability of husband's selection is $1/7$ and that of wife is $1/5$. What is the probability that?
   i)Both of them will be selected
   ii)Only one of them will be selected
   iii) None of them will be selected

10. Describe the merits of sampling techniques.

11. The following data is collected by two characteristics

	Smokers	**Non-smokers**
Literate	83	57
Illiterate	45	68

   Based on this can you say there is no relation between the habits of smoking and literacy.

12. Solve the following Transportation problem.

	W	**X**	**Y**	**Z**	**Supply**
P	190	300	500	100	70
Q	700	300	400	600	90
R	400	100	600	200	180
Demand	50	80	70	140	

13. Construct the network and find the critical path and project duration using PERT calculation for the following project in days

Job	**Predecessors**	t_o	t_m	t_p
A	-	2	5	8
B	A	6	9	12
C	A	6	7	8
D	B, C	1	4	7
E	A	8	8	8
F	D, E	5	14	17
G	C	3	12	21
H	F, G	3	6	9
I	H	5	8	11

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