Roll.No. ____________ **20UBACT5012**

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(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.B.A. - END SEMESTER EXAMINATIONS - NOVEMBER 2025
SEMESTER - V

20UBACT5012 - Business Maths and Operations Research

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

Section B

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

1. Find the compound interest (CI) on Rs.12,600 for 2 years at 10% per annum compounded annually.

2. Sam takes a loan of $20,000 for 1 year at an interest rate of 10% per annum. Find the simple interest and the total amount.

3. Find the probability of 'getting 3 on rolling a die'.

4. In a computer centre after studying carefully the three expert programmes, the head of computer centre, estimates the computer time in minutes required by the experts for the application programmes as follows:

	Programmes			
		A	**B**	**C**
Programmes	1	120	100	80
	2	80	90	110
	3	110	140	120

Assign the programmers to the programmes in such a way that the total computer time is minimum.

5. A department has five employees with five jobs to be performed. The time in hours) each men will take to perform each job is given in the effectiveness matrix.

	Employees					
		I	**II**	**III**	**IV**	**V**
	A	10	5	13	15	16
Job	**B**	3	9	18	13	6
	C	10	7	2	2	2
	D	7	11	9	7	12
	E	7	9	10	4	12

How should the jobs be allocated one per employee so as to minimize the total man- hours?

Contd...

6. The following table gives the activities in a construction project and other relevent information. Find out the critical path and the project duration.

Activity	Duration
1-2	4
2-3	5
2-4	7
2-5	6
4-5	0
4-7	8
5-6	9
3-6	10
6-7	3

7. The activities of a project have the following PERT time estimates

Job	Optimistic Time	Most likely Time	Pessimistic Time
1-2	3	6	15
7-8	4	19	28
2-3	6	12	30
3-5	5	11	17
5-8	1	4	7
6-7	3	9	27
4-5	3	6	15
2-4	2	5	8
1-6	2	5	14

8. What are the steps in the mathematical formation of the simplex problem.

Section C

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

9. If principal = Rs 1,00,000. rate of interest = 10% compounded half-yearly. Find
   (i) Interest for 6 months.
   (ii) Amount after 6 months.
   (iii) Interest for the next 6 months.
   (iv) Amount after one year.

10. Two dice are rolled, find the probability that the sum is:
    1. equal to 1
    2. equal to 4
    3. less than 13

Contd...

11. Solve the transportation problem using North West Corner method

Sources	**D$_1$**	**D$_2$**	**D$_3$**	**Supply**
S$_1$	2	3	1	20
S$_2$	5	4	8	30
S$_3$	5	6	8	25
Demand	10	35	30	

12. A project has the following time schedule

Activity	**Time in months**	**Activity**	**Time in months**
1-2	2	4-6	3
1-3	2	5-8	1
1-4	1	6-9	5
2-5	4	7-8	4
3-6	8	8-9	3
3-7	5		

(i) Construct the network
(ii) Find the total float for each activity
(iii) Find CPM and Project duration

13. Define the key terms, assumptions of the linear programming.

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