THREE YEAR BCAS. (CBCS) DEGREE EXAMINATION, NOVEMBER 2017

FIFTH SEMESTER

Part – II

COMPUTER AIDED MODELING

Time : 3 Hours *Max. Marks : 75*

Answer any FIVE of the questions.

(Marks : 5 × 15 marks = 75 marks)

1. Discuss define Operation Research and discuss its characteristics in detail.

2. State different types of models in O.R. and explain them.

3. Explain graphical method and give its limitations.

4. Use simplex method

   Maximize $Z = 4x_1 + 10x_2$

   Subject to constraints:

   $2x_1 + x_2 \leq 10$

   $2x_1 + 5x_2 \leq 20$

   $2x_1 + 3x_2 \leq 18$

   $x_1 \geq 10$ and $x_2 \geq 0$

5. Obtain an inital basic feasible solution to the following T.P. using the matrix minima method

	D_1	D_2	D_3	D_4	Supply
O_1	1	2	3	4	6
O_2	4	3	2	0	8
O_3	0	2	2	1	10
Demand					

6. Use vogel's Approximation method to obtain on initial basic feasible solution of the transportation problem

	D	E	F	G	Available
A	11	13	17	14	250
B	16	18	14	10	300
C	21	24	13	10	400
Demand	200	225	275	250	

7. A marketing manager has 5 salesmen and 5 districts considering the capabilities of the salesmen and the nature of districts, the marketing manager estimates that sales per month (in hundred rupees) for each salesman in each district would be follows

	Machine				
Job	A	B	C	D	E
1	32	38	40	28	40
2	40	24	28	21	36
3	41	27	33	30	37
4	22	38	41	36	36
5	29	33	40	35	39

Find the assignment of salesman to districts that will result in maximum sales.

8. (a) Explain unbalanced transportation problem.

(b) Give differences between assignment and transporation problem.

9. (a) Explain Johnson's procedure for solving 'n' jobs, 2 machines.

(b) In a factory, there are six jobs to perform, each of which should go through two machines A and B, in the order A, B. The processing + timings (in hours) for the jobs are given here. You are required to determine the sequence for performing the jobs that would minimize the total elapsed time, T. What is value of T?

Job	J_1	J_2	J_3	J_4	J_5	J_6
Machine A	1	3	8	5	6	3
Machine B	5	6	3	2	2	10

10. Determine the optimal sequence of jobs that minimizes the total elapsed time based on the following information processing time on machines is given in hours and passing is not allowed.

Job	A	B	C	D	E	F	G
Machine M_1	3	8	7	4	9	8	7
Machine M_2	4	3	2	5	1	4	3
Machine M_3	6	7	5	11	5	6	12