Question Paper Code : 50402

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Seventh Semester
Computer Science and Engineering
CS6704 – RESOURCE MANAGEMENT TECHNIQUES
(Regulations 2013)

Time : Three Hours   Maximum : 100 Marks

Answer ALL questions

PART – A   (10×2=20 Marks)

1. What is Feasible Region in a LPP ?

2. What is Sensitivity Analysis ?

3. What is Dual Problem in LPP ?

4. What is Dual Simplex Method ?

5. What do you understand by Cutting Plane Algorithm ?

6. What is Dynamic Programming ?

7. What is CPM ?

8. Write about PERT.

9. What do you mean by Transportation Problem ?

10. What do you understand by Assignment Problem ?

PART – B   (5×16=80 Marks)

11. a) A manufacturer makes two components, T and A, in a factory that is divided into two shops. Shop I, which performs the basic assembly operation, must work 5 man-days on each component T but only 2 man-days on each component A. Shop II, which performs finishing operation, must work 3 man-days for each of component T and A it produces. Because of men and machine limitations, Shop I has 180 man-days per week available, while Shop II has 135 man-days per week.

If the manufacturer makes a profit of Rs. 300 on each component T and Rs. 200 on each component A, how many of each should be produced to maximize his profit. Use simplex method.

(OR)

b) Explain the types of Models. Also explain the characteristics of a good model along with the principles involved in modeling.

12. a) Use dual simplex method to solve the following LPP :

$$\text{Maximize } Z = -3X_1 - 2X_2$$

Subject to $X_1 + X_2 \geq 1$

$X_1 + X_2 \leq 7$

$X_1 + 2X_2 \geq 10$

$X_2 \leq 3$

and $X_1, X_2 \geq 0$

(OR)

b) Elucidate the procedure for formulating a linear programming problems. Explain the advantages and limitations of linear programming.

13. a) Obtain an optimum basic feasible solution to the following transportation problem :

	To			Available
	7	3	2	2
From	2	1	3	3
	3	4	6	5
Demand	4	1	5	10

(OR)

b) Solve the following assignment problem for maximization given the profit matrix (profit in rupees) :

		Machines		
		P	Q	R	S
	A	51	53	54	50
Job	B	47	50	48	50
	C	49	50	60	61
	D	63	64	60	60

14. a) Solve the following LPP using dynamic programming approach :

$$\text{Max } Z = 3X_1 + 5X_2$$

subject to $X_1 \leq 4$

$X_2 \leq 6$

$3X_1 + 2X_2 \leq 18$

and $X_1, X_2 \geq 0$

(OR)

b) Use Branch and Bound method to solve the following :

$$\text{Maximize } Z = 2X_1 + 2X_2$$

Subject to $5X_1 + 3X_2 \leq 8$

$X_1 + 2X_2 \leq 4$

and $X_1, X_2 \geq 0$ and integer.

15. a) The following table indicates the details of a project. The duration are in days . "a" refers to optimistic time, "m" refers to most likely time and "b" refers to pessimistic time duration.

Activity	1 – 2	1 – 3	1 – 4	2 – 4	2 – 5	3 – 4	4 – 5
a	2	3	4	8	6	2	2
m	4	4	5	9	8	3	5
b	5	6	6	11	12	4	7

i) Draw the net work.

ii) Find the critical path.

iii) Determine the expected standard deviation of the completion time.

(OR)

b) Explain the following :

i) Difference between PERT and CPM

ii) Lagrangian method and Khun-Tucker conditions.

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