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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 :

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

$$\text{Subject to } X_1 + X_2 \geq 1$$

$$X_1 + X_2 \leq 7$$

$$X_1 + 2X_2 \geq 10$$

$$X_2 \leq 3$$

$$\text{and } X_1, X_2 \geq 0$$

(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 :

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

$$\text{subject to } X_1 \leq 4$$

$$X_2 \leq 6$$

$$3X_1 + 2X_2 \leq 18$$

$$\text{and } X_1, X_2 \geq 0$$

(OR)

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

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

$$\text{Subject to } 5X_1 + 3X_2 \leq 8$$

$$X_1 + 2X_2 \leq 4$$

$$\text{and } X_1, X_2 \geq 0 \text{ and integer.}$$

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

- Draw the net work.
- Find the critical path.
- Determine the expected standard deviation of the completion time.

(OR)

- b) Explain the following :

- Difference between PERT and CPM
- Lagrangian method and Khun-Tucker conditions.