

15P244

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Name.....

Reg. No.....

SECOND SEMESTER M.Com. DEGREE EXAMINATION, JULY 2016
(CUCSS - PG)
CC 15P MC2 C09 - MANAGEMENT SCIENCE
(2015 Admission)

Time: Three Hours

Maximum: 36 Weightage

Section A

(Answer *all* questions. Each question carries 1 weightage)

1. What is queuing theory?
2. What is Dummy Activity?
3. What is critical path?
4. Define saddle point.
5. What is decision making under uncertainty?
6. What is mean by an unbalanced transportation problem?

(6 x 1 = 6 weightage)

Section B

(Answer any *six* questions. Each question carries 3 weightage)

7. Solve the following payoff matrix; determine the optimal strategies and value of the game:

Firm B

		Firm B		
		B1	B2	B3
Firm A	A1	15	8	10
	A2	10	12	15
	A3	10	10	15

8. Draw the network diagram for the project whose activities and their precedence relationship are as given below:

Activities :	A	B	C	D	E	F	G	H	I
Predecessor:	-	A	A	-	D	B,C,E	F	E	G,H

9. How the problem of degeneracy arises in a transportation problem? Explain how one overcomes it.

10. How is optimality analysis done in transportation problem? Illustrate your answer with an example.

11. Solve the following L.P.P. graphically.

$$\text{Maximize } Z = 8x_1 + 12x_2$$

$$\text{Subject to } x_1 + x_2 \leq 9$$

$$2x_1 + 5x_2 \leq 36$$

$$x_2 \geq 3$$

$$x_1 \geq 2$$

$$x_1, x_2 \geq 0$$

12. Find the initial basic feasible solution of the following transportation problem by using NWCM :-

		To					Available
		W1	W2	W3	W4	W5	
From	F1	3	4	6	8	9	20
	F2	2	10	1	5	8	30
	F3	7	11	20	40	3	15
	F4	2	1	9	14	16	13
	Required	40	6	8	18	6	78

13. What do you mean by operation research models? Explain its applicability of different models?

14. Explain the simplex method of solving L.P.P.

(6 x 3 = 18 weightage)

Section C

(Answer any *two* questions. Each question carries 6 weightage)

15. A small project is composed of seven activities whose time estimates are listed in the table as follows:

Activity	Estimated duration (in weeks)		
	Optimistic	Most likely	Pessimistic
1-2			
1-3	1	1	7
1-4	1	4	7
2-5	2	2	8
3-5	1	1	1
4-6	2	5	14
5-6	2	5	8
	3	6	15

You are required to:

1. Draw the project network.
2. Find the expected duration and variance of each activity.
3. Calculate the early and late occurrence for each event and expected project length.
4. Calculate the variance and standard deviations of project length.

16. An automobile dealer put four repairmen to four different jobs. The repairmen have somewhat different kinds of skills and they exhibit different levels of efficiency from one job to another. The dealer has estimated the number of man hours that would be required for each job man, which is given in the matrix shown below:

		Jobs			
		A	B	C	D
Men	1 ...	5	3	2	8
	2 ...	7	9	2	6
	3 ...	4	6	5	7
	4 ...	5	7	7	8

Find the Optimal Assignments that will result in minimum man hours needed.

17. Write the "dual" of the following problem and solve it by using simplex method.

$$\text{Minimize } Z = 3x_1 + 5x_2$$

$$\text{Subject to the constraints } 3x_1 + 2x_2 \geq 50$$

$$2x_1 + 4x_2 \geq 40$$

$$x_1, x_2 \geq 0$$

(2 x 6 = 12 weightage)
