17P251 (Pages: 3) Name:……..…….

Reg. No……..……..

SECOND SEMESTER M.Com DEGREE EXAMINATION, MAY 2018

(Regular/Supplementary/Improvement)

(CUCSS - PG)

CC15P MC2 C09 - MANAGEMENT SCIENCE

(2015 Admission onwards)

Time: Three Hours Maximum: 36 Weightage

Section A

Answer all questions. Each question carries 1 weightage.

1. What is mixed strategy game?
2. What is linear programming?
3. What do you mean by an unbalanced transportation problem?
4. What is analogue model?
5. What is Dummy Activity?
6. What is VAM?

(6 x 1 = 6 Weightage)

Section B

Answer any six questions. Each question carries 3 weightage.

7. What is Operations Research? Discuss the phases of Operations Research.
8. Discuss the procedure used in stepping stone method.
9. Solve the following linear programming problem by using graphic method.

   Maximize $Z = 9x_1 + 3x_2$

   Subject to $2x_1 + 3x_2 \leq 13$

   $2x_1 + x_2 \leq 5$

   $x_1, x_2 \geq 0$
10. Explain the Hungarian method of solving assignment problem.
11. Construct a network diagram from the following activities.

Activity	A	B	C	D	E	F	G	H
Prerequisites	-	-	A	A	B	B	C&E	C,E&F

12. Find the starting solution to the following transportation problem by using North West Corner Method.

Origin	W_1	W_2	W_3	W_4	Availability
F_1	10	20	5	7	10
F_2	13	9	12	8	20
F_3	4	15	7	9	30
F_4	14	7	1	1	40
F_5	3	12	5	19	50
Demand	60	60	20	10	

13. Solve the following game by using dominance property:

		Player B		
		I	II	III
Player A	I	1	7	2
	II	6	2	7
	III	6	1	6

14. What is single channel queuing model? State the assumptions in this type of system.

(6 x 3 = 18 Weightage)

Section C

Answer any two questions. Each question carries 6 weightage.

15. Solve the following linear programming problem by using simplex method

Maximize $Z = 50x_1 + 60x_2$

Subject to $2x_1 + 3x_2 \leq 1500$

$3x_1 + 2x_2 \leq 1500$

$x_1 \leq 450$

$x_1, x_2 \geq 0$

16. A small project consisting of eight activities has the following characteristics:

Activity	Preceding activity	Time in days		
		Optimistic	Most likely	Pessimistic
A	None	2	4	12
B	None	10	12	26
C	A	8	9	10
D	A	10	15	20
E	A	7	7.5	11
F	B,C	9	9	9
G	D	3	3.5	7
H	E,F,G	5	5	5

(a) Draw the project network and identify all the paths through it.
(b) Find earliest and latest expected time and
(c) Determine the critical path
(d) If a 30 days deadline is imposed, what is the probability that the project will be finished within the time limit?

17. Find the optimum solution to the assignment problem having the following cost matrix:

	Sales territories(cost in Rs. thousands)				
Salesmen		I	II	III	IV
	A	30	25	26	28
	B	26	32	24	20
	C	20	22	18	27
	D	23	20	21	19

(2 x 6 = 12 Weightage)

****