PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

MSc DEGREE EXAMINATION MAY 2019
(Second Semester)

Branch - **COMPUTER SCIENCE**

RESOURCE MANAGEMENT TECHNIQUES

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks!

Answer ALL questions
ALL questions carry EQUAL marks (10x1 = 10)

1 Graphical method is used for involving
(i) three variables (ii) two variables
(iii) four variables (iv) none of these

2 If the objective function z to be minimized then we convert into problem of maximizing by
(i) -Minimum (z) (ii) Maximum (-z)
(iii) -Maximum (-z) (iv) None of these

3 _____ is one of the sub-classes of linear programming problems.
(i) assignment problem (ii) transportation problem
(iii) inventory problem (iv) none of these

4 In MODI method, for each occupied cell in the current solution the system of equations solved is
(i) Uj+Vj-cy =0 (ii) Ui+Vj<Cij (iii) u= Cjj+ Vj (iv) none of these

5 _____ stands for a number of customers waiting to be served.
(i) queues (ii) arrival (iii) server (iv) none of these

6 _____ is a rule according to which customers are selected for service who queue has formed.
(i) service mechanism (ii) queue discipline
(iii) service channels (iv) none of these

7 PERT networks are
(i) event oriented (ii) activity oriented
(iii) event and activity oriented (iv) none of these

8 Activity lies between
(i) three events (ii) four events (iii) two events (iv) none of these

9 The algebraic sum of gains and losses of all the players is zero are called
(i) two person game (ii) zero sum games
(iii) two person zero sum games (iv) none of these

10 The posi tion in the pay off matrix where the minimum of row minima coincides with the minimum of the column maxima is called
(i) maximum value (ii) saddle point
(iii) optimum value (iv) none of these

SECTION - B (25 Marks!

Answer ALL questions
ALL questions carry EQUAL Marks (5 x 5 = 25)

11a Explain graphical solution of LPP with an example.

OR

b Write a short note on Two-phase method.

12 a Explain North-West comer rule and least cost method.

OR

b Explain assignment problem.

13 a Explain the input process and service mechanism in queuing model.

OR

b Write a short note on queue discipline and capacity of the system.

14 a Explain simulation and its applications.

OR

b Explain the generation of uniform (0,1) random observations.

15 a Discuss the two-person zero-sum games.

OR

b Describe Economic Order Quantity.

SECTION -C (40 Marks)

Answer ALL questions

ALL questions carry **EQUAL** Marks (5 x 8 = **40)**

16 a Solve the following LPP by using Simplex method

Maximise z=xj+2x2+3x_3

subject to the constraints $\mathbf{Xj+2x_2+3x_3<10}$

$x,+x_2<5$

$x_b x_2,x_3>0$

OR

b Use Big M method to minimize z=2x|+x_2

subject to the constraints 3x!+X2=3

$4xi+3x_2>6$

$Xt+2x_2\text{^}3$

$x_b x_2>0$

17 a Find optimum solution to the following transportation problem:

Plant	Warehouse W!	W_2	W_3	W_4	Availability
F_t	7	4	3	5	235
F_2	6	8	7	4	280
F_3	5	6	9	10	110
Requirements	125	160	110	230	

OR

b Solve the following assignment problem:

	A	B	C	D
1	"10	25	15	20'
2	15	30	5	15
3	35	20	12	24
4	17	25	24	20_

18 a Describe (M / M /1 : oo / FIFO) queuing model.

OR

b If for a period of 2 years in the day (8 to lO.am) trains arrive at the yard every 20 minutes but the sendee time continues to remain 36 minutes then calculate for this period:

i) the probability that the yard is empty.

ii) average number of trains in the system; on the assumption that the line capacity of the yard is limited to 4 trains only.

19 a Describe CPM and PERT analysis.

OR

b The following table lists the jobs of a network along with their time estimates:

Job		Duration		
i	j	Optimistic	Most likely	Pessimistic
i	2	3	6	15
i	6	2	5	14
2	3	6	12	30
2	4	2	5	8
3	5	5	11	17
4	5	3	6	15
6	7	3	9	27
5	8	1	4	7
7	8	4	19	28

i) Draw the project network ii) Calculate the length and variance of the critical path.

iii) What is the approximate probability that the jobs on the critical path will be forty-one days?

20 a Solve the game whose pay off matrix is

	PlayerB	
	"-4	3'
	-7	1
Player A	- 2	- 4
	-5	-2
	-1	-6 _,

OR

b Describe economic lot size with finite rate replenishment in inventory model.

Z-Z-Z **END**