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(FOR THE CANDIDATES ADMITTED

DURING THE ACADEMIC YEAR 2022 ONLY)

22UMS616

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : MAY-2025

B.Sc.-Mathematics **MAXIMUM MARKS: 50**

SEMESTER:VI **TIME : 3 HOURS**

PART - III

OPERATIONS RESEARCH-II

SECTION - A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. (K1)

1. A mixed strategy game can be solved by_____.
   a) Matrix method b) Algebraic method
   c) Graphical method d)All of the above

2.A sequencing problem involving six jobs and three machines requires evaluation of_____.
   a) (6!+6!+6!) sequence b) $(6!)^3$Sequence
   c) (6×6×6) sequence d) (6+6+6) sequence

3.When there are more than one servers, customer behavior in which he moves from one queue to another is known as_____.
   a) balking b) reneging c) jockeying d) alternsting

4. Economic order quantity (EOQ) results in_____.
   a) Equalisation of carrying cost and procurement cost b) Minimization of set up cost
   c) Favourable procurement price d) Reduced chances of stock outs

5.The slack for an activity in network is equal to_____
   a) LS-ES b) EF-ES c) LF-LS d) EF-LS

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES. (K2)

6. Define Pay off matrix in game.
7. Define total elapsed time.
8. List the component of queueing system.
9. Define the set up cost.
10. Write the expansion of PERT.

SECTION – B (5 X 3 = 15 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.(K3)

11. a) Define saddle point.

(OR)

b) State Minmax Principles.

12.a) Write the some of the basic terms in sequencing.

(OR)

b) Give an example of a sequencing model.

13.a) List the basic elements of a queueing system.

(OR)

b) Write the rule for queue discipline.

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14.a) List the type of inventories.

(OR)

b) Define the terms: i) Demandii) Lead time

15.a) Write the common errors in a network construction

(OR)

b) List out the three different time estimates for each activity.

SECTION - C (5X5= 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K4 &K5)

16.a) Determine which of the following two person zero-sum games are strictly determinable and fair.Give optimum strategies for each player in the case strictly determinable games.

i) Player A $\begin{matrix} & \text{Player B} \\ \text{Player A} & \begin{bmatrix} 5 & 0 \\ 0 & 2 \end{bmatrix} \end{matrix}$ ii) Player A $\begin{matrix} & \text{Player B} \\ & \begin{bmatrix} 0 & 2 \\ -1 & 4 \end{bmatrix} \end{matrix}$

(OR)

b) Solve the game whose payoff matrix is given by

$$\begin{matrix} & & \text{Player B} & \\ \text{Player A} & \begin{bmatrix} 1 & 3 & 1 \\ 0 & -4 & -3 \\ 1 & 5 & -1 \end{bmatrix} \end{matrix}$$

17.a) There are five jobs each of which must go through the two machines A and B in the order AB. Processing time given below.

Jobs	1	2	3	4	5
Machine A	5	1	9	3	10
Machine B	2	6	7	8	4

Determine the sequence and total elapsed time.

(OR)

b) There are 6 jobs which must be two machines I and II in the order I II,

Job	A	B	C	D	E	F
Machine I	1	4	6	3	5	2
Machine II	3	6	8	8	1	5

Find the sequence that minimizes the total elapsed time.

18. A TV repairman finds that the time spent on his jobs has an exponential distribution with mean 30 minute.If he repairs sets in the order in which they come in and if the arrival of sets is approximately Poisson with an average rate of 10 per 8 hour day.What is repairman's expected idle time each day? How many jobs are a head of the average set just brought-in?

19. An oil engine manufacturer purchases lubricants at the rate of Rs 42 per piece from a vendor. The requirement of these lubricants is 1800 per year. What should be the order quantity per order, if the cost per placement of an order is Rs 16 and inventory carrying charge per rupee per year is only 20 paise.

20. The following table gives the activities and duration of a construction project.

Activity:	1-2	1-3	2-3	2-4	3-4	4-5
Duration(days)	20	25	10	12	6	10

a) Draw the network for the project

b) Find the critical path.

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