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(FOR THE CANDIDATES ADMITTED

DURING THE ACADEMIC YEAR 2022 ONLY)

22PCC206

REG.NO. :

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

END-OF-SEMESTER EXAMINATIONS : MAY-2023

COURSE NAME: M.Com.-C.A **MAXIMUM MARKS: 50**

SEMESTER: II **TIME : 3 HOURS**

OPERATIONS RESEARCH

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.
MULTIPLE CHOICE QUESTIONS. (K1)

1. Operation research is the art of winning wars without actually _____.
   a. fighting b. work c. problem d. dealing
2. The order of occurrence is known as _____.
   a. machine b. sequence c. possible d. problem
3. Queue the _____ lines are otherwise called queue.
   a. service b. system c. waiting d. unwitting
4. The objective of inventory control is to maintain stock level at _____ cost
   a. direct b. indirect c. maximum d. minimum
5. A network diagram is a graphical _____ of a project
   a. representation b. technique c. method d. dependence

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

6. Define optimal solution.
7. Intro the Assignment problem.
8. What is Queuing Theory?
9. Define Inventory.
10. What is Network analysis?

SECTION – B (5 X 3 = 15 MARKS)

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

11. a)

	D_1	D_2	D_3	D_4	a_i
Q_1	6	4	1	5	14
Q_2	8	9	2	7	16
Q_3	4	3	6	2	5
b_j	6	10	15	4	35

Solve the following using the North West Comer Rule.

(OR)

b) Explain the method of solving maximizing problem in transportation.

(CONTD…….2)

12. a) Solve the following assignment problem using Hungarian method.

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

(OR)

b) What are the steps involved in Hungarian method?

13.a) A TV repair man finds that time spend on his jobs has an exponential distribution with mean 30 minits. If he repairs sets in the order in which they came in and of the arrival of sets is approximately poison with an average rate of 10 per 8 hours day. What is repair mans expected idle time each they? How many jobs are a head of the average set just brought in?

(OR)

b) The cost pattern for 2 machine A & B when money value is not considered is given below:

Year	Cost at the beginning of the year	
	Machine A	Machine B
1	5000	8000
2	3000	1000
3	2000	1000

Find the cost pattern for each machine when money is work 10% per year and find which machine less costly.

14. a) Explain the various types of inventory.

(OR)

b) If the annual demand is 600 units, the storage cost is Rs. 0.60 per year, per unit and the setup cost is Rs. 80 per run, find the optimum run size.

15.a) Draw the network for the following

Jobs	Immediate Procedures
A	-
B	-
C	-
D	A,B
E	B,C

(OR)

b) Explain the types of PERT network.

SECTION – C (5 X 5 = 25 MARKS)

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

16. a) Use VAM to uptain initial basic feasible solution.

	A	B	C	
I	2	7	4	5
II	3	3	1	8
III	5	4	7	7
IV	1	6	2	14
	7	8	18	

(OR)

(CONTD…….3)

b) A cement factory manger is considering a best way to transport cement from 3 manufacturing centers. P, Q, R to deposits ABCS and E the weekly production and demand along transportation cost per tonne are given below.

	A	B	C	D	E	
P	4	1	3	4	4	60
Q	2	3	2	2	3	35
R	3	5	2	4	4	40
	22	45	20	18	30	135

What should be the distribution programme ?

17. a) The textile emporium has four salesman A, B, C & D Each salesman can handle any counter. The service time of each counter when manned by each salesman is given below.

	A	B	C	D
W	41	72	39	52
X	22	29	49	65
Y	27	39	60	51
Z	45	50	48	52

How should the salesman allocated to appropriate counters so as to minimize the total service time? Each salesman should handle only one counter.

(OR)

b) An operator has to perform 2 operations turning and threading. The time requires performing these operations for each job is known. Determine the order in which the jobs should be processed in order to minimize the total time required to turn out all the jobs.

Jobs	1	2	3	4	5	6	7
Time for turning (minites)	8	10	10	6	12	1	3
Time for threading (minites)	3	12	15	6	10	11	9

18. a) At a petrol bank customers arrive in a position process with an average time of 5 minits between arrivals. The time intervals between services follow exponential distribution with a meen time of 2 minits. By how much should the flow of customers be increased to justify the opening of a second service point if the management is willing to open the same provided the customer has to wait for 5 minits for the service?

(OR)

b) The truck owner find from his past records that the maintenance cost per year of a truck who's purchase price is Rs. 8000 are as given below:

Year	1	2	3	4	5	6	7	8
Maintenance	1000	1300	1700	2200	2900	3800	4800	6000
Resale price Rs.	4000	2000	1200	600	500	400	400	400

Determine at which time it is profitable to replace the truck?

(CONTD…….4)

19.a) A stockiest has to supply 400 units of a product every Monday to his customers. He gets the product at Rs. 50 per unit from the manufacturer is Rs. 75 per order. The cost of carrying inventory is 7.5% per year of the cost of product find.

i. Economic lot size
ii. The total optimal cost including the cost of materials

(OR)

b) Consider the following data unit cost Rs. 100
Order cost Rs. 160
Inventory carting cost Rs. 20
Back order cost (stock out cost) Rs. 10
Annual demand = 1000 units
Compute the following,

a. Minimum cost order quantity
b. Time between order
c. Maximum number of back order
d. Maximum inventory level
e. Over all annual cost

20. a) What are the differences between the CPM and PERT?

(OR)

b) The following table given the activity is a construction production other relevant information.

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

1. Draw the network for the project
2. Find critical path and project duration
3. Find total float for each activity.

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