***Enrol. No.*_____**

International Institute of Health Management Research (IIHMR)

NEW DELHI

(*Hospital Management Stream*) (Batch 2019-2021)

OPERATIONS MANAGEMENT IN HOSPITALS

(HOM-716)

End Term Examination

Time allowed: 2 hrs Max. Marks: 70

(Answer any five questions)

Except Question numbers 1 and 2 all should be uploaded. Scan the answers. Convert the images. Paste it into word and convert as one PDF

Each question carries 14 marks (5 x 14 = 70 marks)

1. A manufacturer of furniture makes two products – chairs and tables. Processing of this product is done on two machines A and B. A chair requires 2 hours on machine A and 6 hours on machine B. A table requires 5 hours on machine A and no time on machine B. There are 16 hours of time per day available on machine A and 30 hours on machine B. Profit gained by the manufacturer from a chair and a table is Rs 2 and Rs 10 respectively. What should be the daily production of each of two products?

2. Determine the minimum cost to the following transportation problem using matrix minima method and vogel's method

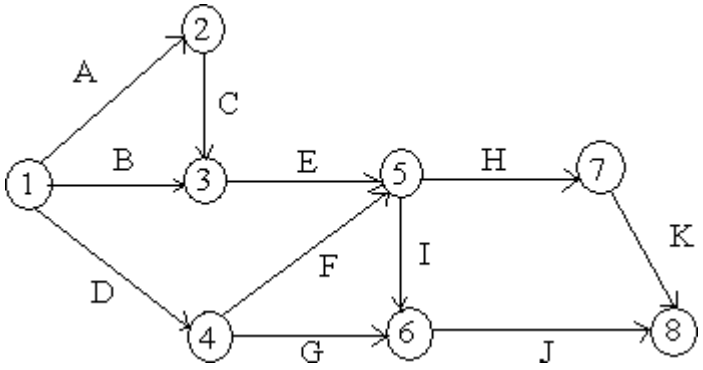
		D1	D2	D3	D4	Capacity
From	O1	1	2	1	4	30
	O2	3	3	2	1	50
	O3	4	2	5	9	20
	Demand	20	40	30	10	

3. A car hire company has one car at each of five depots a, b, c, d and e. a customer requires a car in each town namely A, B, C, D and E. Distance (kms) between depots (origins) and towns (destinations) are given in the following distance matrix

	a	b	c	d	e
A	160	130	175	190	200
B	135	120	130	160	175
C	140	110	155	170	185
D	50	50	80	80	110
E	55	35	70	80	105

What would be the most efficient assignment and minimum distance traveled?

4. For the project



Task:	A	B	C	D	E	F	G	H	I	J	K
Least time:	4	5	8	2	4	6	8	5	3	5	6
Greatest time:	8	10	12	7	10	15	16	9	7	11	13
Most likely time:	5	7	11	3	7	9	12	6	5	8	9

Find the earliest and latest expected time to each event and also critical path in the network.

5. Write short notes on the following

a. Role of constraints and objectives in the construction of mathematical models
b. Area of applications of OR
c. OR as an decision making science

6. Each year Blue Cross Hospital purchases 20000 syringes that cost Rs.16 per syringe. The cost of placing an order is Rs.12 and the cost of holding is 24% per year.

i. Determine the economic order quantity.
ii. Compute the average inventory level, assuming that minimum inventory level is zero.
iii. Estimate the number of orders per year and time between orders.
iv. Determine the total annual cost.

7. On an average 90 patients per 24 hours day require the service of an Emergency clinic. Also on an average, a patient requires 10 minutes of active attention. Assume that the facility can handle only one emergency at a time. Suppose that it costs the clinic Rs 100 per patient treated to obtain an average servicing time of 10 minutes and that each minute of decrease in this average time would cost Rs 10 per patient treated. How much would have to be budgeted by the clinic to decrease the average of the queue from 1 1/3 patients to ½ patient.