Enrolment No.: .....

IIHMR UNIVERSITY

Institute of Health Management Research

MBA Hospital and Health Management
Batch-27th (2022-2024) Hospital Management
Second Year, Term 6 End Term Examination, March 2024

HOM-716 Operations Management in Hospitals

Time - 3 Hour **Maximum Marks: 50 (Minimum Marks: 20)**

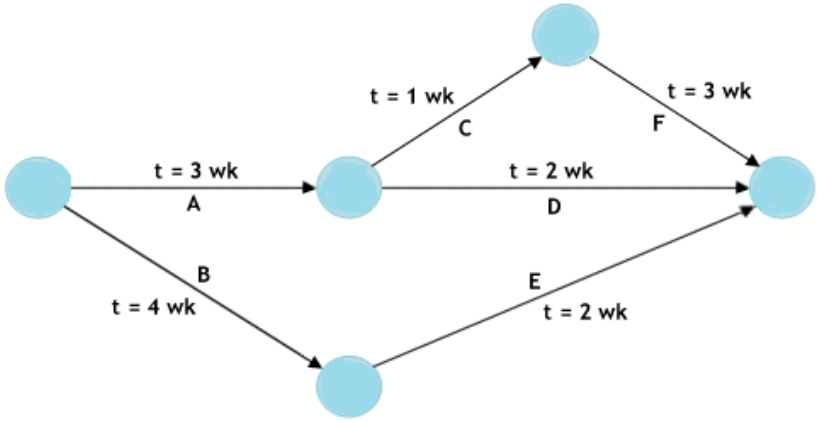
Instructions to students:

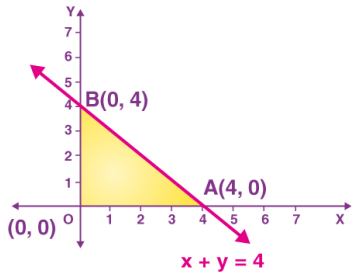
- **This question paper contains 3 printed pages.**
- **Don't write anything on the Question Paper except writing your Enrolment No.**

Part A

(Maximum Marks: 5)

Q1. Choose the correct option for the following (1 mark each):

(a).	Modern operations management has its roots in the theories of: (i) Human Relations Management (ii) Organizational Behaviour (iii) Scientific management (iv) Bureaucratic Management
(b).	The project duration (length of critical path) in the network diagram below is:  (i) 5 wks (ii) 6 wks (iii) 7 wks (iv) 9 wks
(c).	Forecasts helps the healthcare managers in a) Planning the kinds of services supplied and the number of each to offer. b) Identifying what facilities and equipment to have c) Workforce levels, purchasing & budgeting d) All of the above

(d).	The maximum value of Z = 3x + 4y subjected to constraints x + y ≤ 4, x ≥ 0 and y ≥ 0 is:  The point at which the objective function is maximized is : a) (0, 4) b) (4, 0) c) (0, 0) d) (2, 2)
(e).	The Economic Order Quantity (EOQ) is calculated as a) $\sqrt{DS/H}$ b) $\sqrt{DS/2H}$ c) $\sqrt{DS/3H}$ d) $\sqrt{2DS/H}$ Where, D=Demand (units), S=Cost per order, H=Holding cost per unit

Part B

(Maximum Marks: 15)

Answer any three of the following questions of Part B.

Q2.	What do you understand by Operations Management. Explain in brief, important techniques which could be applied in hospitals.	(5)
Q3.	Explain the LP structure of transportation problem explaining decision variables, objective function, and constraints.	(5)
Q4.	Explain ABC – VED analysis used in inventory management.	(5)
Q5.	Explain the EOQ model which could be applied in managing medical inventories. Also explain the EOQ model under quantity discount.	(5)
Q6.	An office has five workers, and five jobs (tasks) have to be performed. Workers differ in efficiency and jobs differ in their intrinsic difficulty. Time each worker would take to complete each task is given in the effectiveness matrix.	(5)

		Workers				
		I	**II**	**III**	**IV**	**V**
	A	6	12	3	11	15
	B	4	2	7	1	10
Jobs	**C**	8	11	10	7	11
	D	16	19	12	23	21
	E	9	5	7	6	10

How the tasks should be allocated to each worker so as to minimize the total man-hour?

Part C

(Maximum Marks: 30)

Answer <u>any three</u> of the following questions of Part C.

Q7. (10)

Table below shows the precedence relationships among the activities to complete a hospital project.

	Activity	Predecessor	Duration (weeks)
Start	A	-	6
	B	A	12
	C	A	10
	D	B	20
	E	B	11
	F	C	8
	G	E	6
	H	D,F	3
Finish	I	G,H	6

Construct an activity on arrow network for the project. Identify the paths and path project durations. Determine the critical path and the expected project completion time. Find the ES, LS, EF, LF, and slack time for each activity.

Q8. (10)

A Medical Supply company produces catheters in packs at three productions facilities. The company ships the packs from the production facilities to four warehouses. The packs are distributed directly to hospitals from the warehouses. The table shows the costs per pack to ship to the four warehouses, along with demand and supplying capacity.

Medical Supply

	TO WAREHOUSE				
FROM PLANT	**Seattle**	**New York**	**Phoenix**	**Miami**	**<u>Capacity</u>**
Juarez	$19	$7	$3	$21	100
Seoul	$15	$21	$18	$6	300
Tel Aviv	$11	$14	$15	$22	200
<u>Demand</u>	150	100	200	150	

As the Operations Manager, find out which plant should supply which warehouse, so that the cost of the shipping is minimized? Use VAM method in finding the initial solution. Also find the minimum total cost.

Q9. Explain the location and layout methods in hospital operations management. (10)

Q10. Explain the various qualitative and quantitative techniques of forecasting in hospital operations. (10)

Q11. Explain Queuing & Capacity Planning in Hospitals. Explain the single server model. Also explain the queue cost analysis. (10)