OR iii. There are five jobs each of which must go through machines, M1, M2 and M3 in order M1, M2, M3. Processing times are given in the table: **6** 3 1,2, 12 4 1,2 ,3

Job	Machine		
	M1	M2	M3
A	8	5	4
B	10	6	9
C	6	2	8
D	7	3	6
E	11	4	5

Determine the sequence for five jobs that will minimize the elapsed time T and also make Gantt chart to show the sequencing.

Q.6 Attempt any two:

i. Explain the core principles of Total Quality Management (TQM) and how they contribute to improving organizational performance. **5** 2 1,12 5 1,2

ii. What is Kaizen, and how does it contribute to continuous improvement in organizations? **5** 2 1,12 5 1,3

iii. Explain the concept of acceptance sampling and its application in quality control. **5** 1 1 5 1

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Total No. of Questions: 6 *Total No. of Printed Pages:4*

Enrollment No.....

Faculty of Management Studies
End Sem Examination Dec 2024
MS5CO10 Operations Management

Programme: MBA Branch/Specialisation: Management

Duration: 3 Hrs. **Maximum Marks: 60**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

			Marks	BL	PO	CO	PSO
Q.1	i.	Which of the following is a type of productivity? (a) Labor productivity (b) Marketing productivity (c) Financial productivity (d) Administrative productivity	**1**	1	1	1	1
	ii.	Which production strategy involves producing goods based on forecasted demand and keeping them in inventory? (a) Make to Order (b) Assemble-to-Order (c) Make to Stock (d) Just in Time	**1**	2	1	1	1
	iii.	Which of the following is the first step in product selection and design? (a) Marketing analysis (b) Idea generation (c) Product testing (d) Prototype development	**1**	1	1,12	2	1
	iv.	Which layout type is commonly used for projects like shipbuilding or construction? (a) Product layout (b) Process layout (c) Group layout (d) Fixed position layout	**1**	2	1,12	2	1,2
	v.	Which type of forecasting technique relies on expert opinions and market research? (a) Quantitative forecasting (b) Qualitative forecasting (c) Time series analysis (d) Exponential smoothing	**1**	2	1	3	1,2 ,3

vi.	The level production strategy aims to: (a) Maintain a steady production rate regardless of demand (b) Produce goods only when there is demand (c) Use a combination of steady production and demand matching (d) Subcontract excess production to third parties	**1**	1	1	3	1
vii.	The primary goal of assembly line balancing is to: (a) Increase product variety (b) Minimize cycle time and maximize output (c) Reduce labor costs (d) Improve product quality	**1**	1	1	4	1
viii.	Johnson's Rule aims to: (a) Minimize setup time (b) Maximize machine utilization (c) Minimize makespan (total completion time) (d) Minimize labour costs	**1**	1	1	4	1
ix.	In TQM, the concept of "customer satisfaction" is considered: (a) The ultimate measure of quality (b) A secondary goal (c) A management responsibility only (d) An outcome of quality control	**1**	1	1	5	1
x.	Which quality guru is known for the concept of "zero defects"? (a) W. Edwards Deming (b) Joseph Juran (c) Philip Crosby (d) Kaoru Ishikawa	**1**	1	1	5	1
Q.2 i.	What are the responsibilities of production manager?	**4**	2	1,12	1	1,2 ,3
ii.	Define productivity and explain why it is a crucial metric for production and operations management.	**6**	2	1,12	1	1,2
iii.	Explain the Make to Stock production strategy. Discuss its advantages and disadvantages.	**6**	2	1,12	1	1,2 ,3

Q.3	i.	Describe the Centre of Gravity Model and its application in determining the optimal location for a manufacturing or distribution facility.	**4**	2	1,2, 12	2	1,2 ,3
	ii.	Discuss the key steps involved in the product selection and design process. How do these steps ensure that the final product meets market needs?	**6**	2	1,12	2	1,2
OR	iii.	Explain any three types of layouts.	**6**	1	1	2	1
Q.4	i.	Explain the difference between qualitative and quantitative forecasting methods.	**4**	2	1,12	3	1,2
	ii.	Compare the chase strategy, level production strategy, and mixed strategy in aggregate production planning.	**6**	2	1,12	3	1
OR	iii.	Explain the concept of Materials Requirement Planning (MRP). What are the main components of an MRP system, and how do they interact to ensure efficient production planning?	**6**	2	1,12	3	1
Q.5	i.	Write any four assumptions of Johnson rule?	**4**	1	1	4	1
	ii.	A company is setting an assembly line to produce 192 units per eight hrs shift. The information regarding work elements in terms of times and immediate predecessors are given.	**6**	2	1,2, 12	4	1,2 ,3

Work element	Time (sec)	Immediate predecessors
A	40	NONE
B	80	A
C	30	D.E.F
D	25	B
E	20	B
F	15	B
G	120	A
H	145	G
I	130	H
J	115	C,I

Find:

(a) What is the desired cycle time?

(b) What is the theoretical number of stations?

(c) What are the efficiency and balance delay of the solution obtained?

Marking Scheme

MS5CO10 (T) Operations Management (T)

Q.1	i)	a) Labor productivity		**1**
	ii)	c) Make to Stock		**1**
	iii)	b) Idea generation		**1**
	iv)	d) Fixed position layout		**1**
	v)	b) Qualitative forecasting		**1**
	vi)	a) Maintain a steady production rate regardless of demand		**1**
	vii)	b) Minimize cycle time and maximize output		**1**
	viii)	c) Minimize make span (total completion time)		**1**
	ix)	a) The ultimate measure of quality		**1**
	x)	c) Philip Crosby		**1**
Q.2	i.	What are the responsibilities of production manager? Each responsibility carries 1 mark		**4**
	ii.	Define productivity explain why it is a crucial metric for production and operations management.	3 marks 3 marks	**6**
OR	iii.	Explain the Make to Stock production strategy. Discuss its advantages and disadvantages.	3 marks 3 marks	**6**
Q.3	i.	Describe the Centre of Gravity Model Its application in determining the optimal location for a manufacturing or distribution facility.	2 marks 2 marks	**4**
	ii.	Discuss the key steps involved in the product selection and design process. How do these steps ensure that the final product meets market needs?	3 marks 3 marks	**6**
OR	iii.	Explain any three types of layouts? Each layout carries 2 mark		**6**
Q.4	i.	Explain the difference between qualitative and quantitative forecasting methods. Each difference carries 1 mark		**4**
	ii.	Compare the chase strategy, level production strategy, and mixed strategy in aggregate production planning. Each comparison carries 2 marks		**6**
OR	iii.	Concept of Materials Requirement Planning (MRP) Main components of an MRP system They interact to ensure efficient production planning	2 marks. 2 marks 2 marks	**6**
Q.5	i.	Write any four assumptions of Johnson rule? Each assumption carries 1 mark		**4**
	ii.	**Desired Cycle Time:** 150 seconds ii) **Theoretical Number of Stations:** 5 iii) **Efficiency:** 96% iv) **Balance Delay: 4**%	2 marks 2 marks 1 mark 1 mark	**6**
OR	iii.	**Optimal Sequence:** CBEAD **Total Elapsed Time (Makespan):** 51 minutes Gantt chart	 3 marks 3 marks	**6**
Q.6				
	i.	Core principles of Total Quality Management (TQM) They contribute to improving organizational performance.	2.5 marks 2.5 marks	**5**
	ii.	What is Kaizen It contribute to continuous improvement in organizations	2.5 marks 2.5 marks	**5**
	iii.	Explain the concept of acceptance sampling its application in quality control.	2.5 marks 2.5 marks	**5**

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