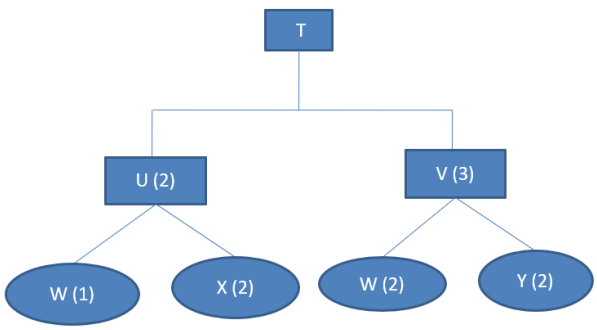
VPM's
DR VN BRIMS, Thane
Programme: MMS (2024-26)
First Semester Regular Examination January 2025

Course Name:	**Operations Management**	**Course Code**	**C-107**
Roll No.		**Marks**	**60**
Total No. of Questions	6	**Duration**	**2 Hours**
Total No. of printed pages	03	**Date**	**09-01-2025**

Course Outcome Statements:

CO1. RECALL basic concepts of operations management and cite its evolution
CO2. ASSOCIATE the concepts of operations management and connect with business scenarios
CO3. APPLY basic principles of operations management in production and operation functions
CO4. EXAMINE the problems related to operations management in day-to-day functioning
CO5. RECOMMEND tentative solutions to the problems related to operations management

Instructions: -			**Marks**	**BL**	**CO**
Q. No 1 (All Questions are Compulsory)					
Q. No.		**Questions**			
Q. 1		**Case/Case-let Study**			
		Dynamic Strategies at Stellar Pharmaceuticals: The Tale of Level and Chase in Production Planning In the highly regulated and demand-sensitive pharmaceutical industry, **Stellar Pharmaceuticals** faced a pressing challenge in balancing production for their flagship over-the-counter (OTC) cold and flu medicine. With demand peaking during flu seasons and dropping during the off-season, the company needed to navigate between maintaining steady production or ramping up and down in response to demand fluctuations. At first, Stellar Pharmaceuticals adopted the **Level Strategy**. By maintaining a consistent production rate throughout the year, they ensured smooth operations on the factory floor, meeting slightly increasing demand by maintaining inventory level and minimized disruptions in their supply chain. This approach also provided a predictable workload for employees and reduced the need for frequent adjustments in production schedules. During off-peak periods, this strategy worked well, as inventory levels were sufficient to meet market needs. However, challenges arose when flu season hit unexpectedly early or with greater severity than anticipated. Inventory shortages led to delayed deliveries to retailers, causing frustration among distributors and customers alike. Recognizing the limitations of the Level Strategy, Stellar Pharmaceuticals switched to the **Chase Strategy** as flu season approached. Production was scaled dynamically to match the increasing demand, with the company hiring temporary workers, running overtime shifts, and even outsourcing some production to third-party manufacturers. This flexibility ensured that shelves were stocked promptly, enhancing customer satisfaction and helping the company capitalize on the peak season's revenue potential. Despite its advantages, the Chase Strategy came with its own set of challenges. The increased costs of temporary labor, overtime, and outsourcing reduced profit margins. Additionally, managing fluctuating resources required meticulous planning, and excess capacity during off-seasons became a concern.			

	a.	Considering the case study of Stellar Pharmaceuticals and their adoption of Level and Chase production strategies, analyze the strengths and weaknesses of both strategies.	**5**	**Level 4**	**CO4**
	b.	Based on your understanding, recommend an appropriate production strategy or combination of strategies that Stellar Pharmaceuticals could implement to meet demand effectively.	**5**	**Level 5**	**CO5**
Q. 2		**Answer the following**			
	a.	In a highly competitive logistics and distribution industry, **Vertex Logistics** faced the challenge of determining the optimal location for a new centralized warehouse to serve three primary retailer locations. The objective was to minimize transportation costs while efficiently meeting the delivery requirements of all retailers. The coordinates (in km) of each location are as follows: • **Retailer X:** (30 km, 60 km) • **Retailer Y:** (90 km, 40 km) • **Retailer Z:** (70 km, 80 km) The volumes to be transferred to each retailer from the warehouse are as follows: • **Retailer X:** 6000 units • **Retailer Y:** 4000 units • **Retailer Z:** 3000 units Determine the Center of gravity for this distribution network to locate the optimal position for the warehouse. Recommend different factors to be considered while determining location of a new warehouse.	**10**	**Level 5**	**CO5**
		Or			
	b	Compare the different types of facility layouts—Product, Process, Fixed Position, and Hybrid—in terms of their suitability for various production types such as mass production, project form of production, Job production etc.	**10**	**Level 5**	**CO5**
Q. 3		**Answer the following**			
	a.	A tire manufacturing company is facing challenges with production delays, high costs, and inefficiencies. Analyse different types of wastes associated with the same to make it lean manufacturing.	**10**	**Level 4**	**CO4**
		Or			
	b.	Suppose that we are to produce product T, which is made of 2 parts U and three parts V. Part U in turn is made of 1 part W, and 2 parts X. Part V is made of 2 parts of W and Two parts Y. Lead time for T: 1 week, U: 2 weeks, V: 2 weeks, W: 3 weeks, X: 1 week, Y: 1 week. **Analyze** the given the product structure tree, **list** the net requirements for U, V, W, X, Y and Conclude MRP if if 100 units of T are required 	**10**	**Level 4**	**CO4**

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<tr><th>Q. 4</th><th></th><th>Answer the following</th><th></th><th></th><th></th></tr>
<tr><td></td><td>a.</td><td>Construct a detailed process flowchart outlining the steps involved in the admission process of MMS Program</td><td>10</td><td>Level 3</td><td>CO3</td></tr>
<tr><td colspan="6">Or</td></tr>
<tr><td></td><td>b.</td><td>Given the following details for a product solve the problem:
Annual demand: 10,000 units
Cost per order (ordering cost): $100
Holding/ Carrying Cost per unit per year: $2
Calculate the Economic Order Quantity (EOQ), the number of orders per year. Identify advantages and disadvantages of EOQ Model.</td><td>10</td><td>Level 3</td><td>CO3</td></tr>
<tr><th>Q. 5</th><th></th><th>Answer the following</th><th></th><th></th><th></th></tr>
<tr><td></td><td>a.</td><td>Explain the key benefits that organizations can derive from implementing value engineering.</td><td>10</td><td>Level 2</td><td>CO2</td></tr>
<tr><td colspan="6">Or</td></tr>
<tr><td></td><td>b.</td><td>Explain the various inventory classification techniques—FSN, ABC, SDE, SOS, and GOLF with examples of your choice.</td><td>10</td><td>Level 2</td><td>CO2</td></tr>
<tr><th>Q. 6</th><th></th><th>Answer the following</th><th></th><th></th><th></th></tr>
<tr><td rowspan="2">a</td><td>i</td><td>What is demand Forecasting. Recall the qualitative methods of demand forecasting.</td><td>5</td><td>Level 1</td><td>CO1</td></tr>
<tr><td>ii</td><td>What is Supply Chain Management. Show the significance of the same in business scenario.</td><td>5</td><td>Level 1</td><td>CO1</td></tr>
<tr><td colspan="6">Or</td></tr>
<tr><td rowspan="2">b</td><td>i.</td><td>Recall the difference between goods from services</td><td>5</td><td>Level 1</td><td>CO1</td></tr>
<tr><td>ii</td><td>Use the Jonhson’s Rule and Find the right Sequence for the following. Also find out total time, Idle time for machine 1 and Machine 2:
<table>
<tr><td>Job</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr>
<tr><td>M/C 1</td><td>13</td><td>2</td><td>1</td><td>4</td><td>5</td></tr>
<tr><td>M/C 2</td><td>3</td><td>5</td><td>3</td><td>6</td><td>7</td></tr>
</table></td><td>5</td><td>Level 1</td><td>CO1</td></tr>
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