KUMARAGURU
college of technology
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Register Number: ……

MBA DEGREE EXAMINATIONS: NOV /DEC 2024

(Regulation 2024)

First Semester

MBA -PROJECT MANAGEMENT

24PMT506: Operations Management

COURSE OUTCOMES

CO1: Demonstrate the concepts and applications of operations management for achieving competitive advantage.

CO2: Propose suitable tools and techniques of operations management for productivity Improvement.

CO3: Display analytical thinking skills in the application of suitable tools governing quality for effective business decision making.

Time: Three Hours **Maximum Marks: 100**

PART A (1Q x 20 Marks = 20 Marks) Compulsory Question

1. Just-in-Time (JIT) Manufacturing is a methodology that originated in Japan, primarily from the Toyota Production System. It focuses on reducing waste by receiving goods only as they are needed in the production process. The principle aims to optimize efficiency, reduce inventory costs, and improve product quality. By producing only what is needed, when it is needed, and in the exact amount required, JIT minimizes overproduction, excess inventory, and waiting times. One of the key elements of JIT is its emphasis on continuous improvement (kaizen) and the collaboration of all stakeholders in the supply chain. However, implementing JIT comes with challenges, including the need for precise coordination, reliable suppliers, and robust infrastructure to avoid disruptions.

   A mid-sized automobile component manufacturer, AutoTech Components, faced challenges due to excessive inventory levels, high storage costs, and inefficiencies in production scheduling. The company produced a wide range of products, catering to both domestic and international markets. Over time, its traditional manufacturing approach, based on maintaining high levels of inventory to meet demand fluctuations, resulted in significant waste and declining profitability. The management decided to adopt the JIT manufacturing approach to address these issues.

   The transition to JIT required a comprehensive overhaul of their existing processes. First, AutoTech conducted a detailed analysis of its supply chain and identified areas of inefficiency. The company implemented Kanban systems to signal the need for production or resupply of materials, thereby synchronizing production with actual

demand. Suppliers were integrated into the system, and the company developed long-term partnerships with key vendors to ensure timely delivery of materials in smaller, more frequent batches. Employee training programs were initiated to in still the principles of JIT and encourage a culture of continuous improvement. Production lines were restructured to eliminate bottlenecks and reduce lead times.

The initial implementation phase was not without challenges. AutoTech faced resistance from employees who were accustomed to the old ways of working. Suppliers struggled to meet the new requirements for smaller and more frequent deliveries. Additionally, any delays in material delivery caused disruptions, as the company no longer held large inventories to cushion against such issues. Despite these hurdles, AutoTech persevered, making incremental improvements and addressing issues as they arose.

Within two years, the results of the JIT implementation began to show. Inventory costs were reduced by 40%, and production lead times decreased by 30%. The company also reported a significant improvement in product quality, as defects were identified and addressed more quickly. Customer satisfaction improved due to faster delivery times and enhanced quality, leading to increased market share. However, the company remained vigilant about potential risks, such as supplier disruptions or sudden demand spikes, which could impact the delicate balance maintained by the JIT system.

i)	What key steps did AutoTech Components take to successfully implement the Just-in-Time manufacturing system? Discuss the challenges faced during this transition and how they were addressed.	10	CO2	[K_4]
ii)	Evaluate the benefits and potential risks of JIT manufacturing as experienced by AutoTech Components. How can the company mitigate these risks while maintaining the benefits of JIT?	10	CO2	[K_4]

PART B (5Q x 4 Marks = 20 Marks) Answer any 5 questions only

2.	Explain how manufacturing organizations differ from service organizations in terms of operations management.	4	CO1	[K_2]
3.	Summarize the key considerations in making process design decisions for manufacturing environments.	4	CO1	[K_2]
4.	Compare the challenges of capacity planning in service operations versus manufacturing operations.	4	CO2	[K_2]
5.	Explain the significance of inventory costs in supply chain management.	4	CO2	[K_2]
6.	Classify the different types of quality costs and provide an example for each.	4	CO3	[K_2]

7.		Compare the dimensions of quality in manufacturing and service industries	4	CO3	[K_2]

Part – C (3Qx20 Marks = 60 marks) Answer any 3 questions only

8.	i)	How can operations managers solve the challenges of balancing cost, quality, and delivery in operational decision-making? Provide a relevant example.	10	CO1	[K_3]
	ii)	Apply the core concepts of operations strategy to improve competitive advantage for a manufacturing organization. Provide an example.	10	CO1	[K_3]
9.	i)	Develop a framework for integrating modern technologies in the new product development process of a consumer electronics company.	10	CO3	[K_3]
	ii)	Plan a process design for manufacturing an eco-friendly packaging product using sustainable materials.	10	CO2	[K_3]
10.	i)	Distinguish between the factors influencing location decisions for service-based and manufacturing-based organizations. Illustrate your analysis with relevant examples.	10	CO2	[K_4]
	ii)	Examine the impact of process layout design on operational efficiency and workflow optimization in manufacturing facilities. Provide case-based insights.	10	CO2	[K_4]
11.	i)	Examine the relationship between work measurement techniques and productivity improvement in manufacturing industries. How can discrepancies in measurement data influence decision-making?	10	CO3	[K_4]
	ii)	Evaluate the benefits and potential risks of JIT manufacturing as experienced by AutoTech Components. How can the company mitigate these risks while maintaining the benefits of JIT?	10	CO3	[K_4]

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