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JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST -2 EXAMINATIONS- 2026

B.Tech-II Semester (CSE/IT/BT/ECE/CE)

COURSE CODE (CREDITS): 24BBWHS431 (4)

MAX MARKS: 25

COURSE NAME: PRODUCTION AND OPERATIONS MANAGEMENT

COURSE INSTRUCTOR: ASA

MAX. TIME: 1 Hour 30 Min

Note: (a) All questions are compulsory.

(b) The candidate is allowed to make Suitable numeric assumptions wherever required for solving problems

(c) Use of calculator is allowed

Q.No	Question	CO	Marks
Q1	<p>A consumer electronics company is planning to launch a new smart wearable device in a highly competitive market where customer preferences change rapidly and technological innovation is constant. The firm must decide on product features, design, cost, and time-to-market while also considering sustainability and user experience. However, adding more advanced features increases production cost and may delay the launch, while a simpler design may fail to attract customers.</p> <p>a) Critically analyze how the firm should approach product design and development decisions.</p> <p>b) Discuss the trade-offs involved between innovation, cost, quality, and speed, and evaluate how customer-centric design and market research can influence the success of the product.</p>	4	2+3 = 5
Q2	<p>An automobile company like Tata Motors produces passenger cars in large volumes, using mass production, while also manufacturing specialized defense vehicles in small batches. At the same time, a smartphone brand like Apple Inc. follows a highly standardized assembly-line system, whereas a furniture startup offers customized modular products based on customer preferences.</p> <p>a) In this context, analyze how different types of manufacturing systems (job, batch, and mass production) are applied across industries.</p> <p>b) Evaluate which system would be most suitable for each product type and justify your answer by considering factors like cost, flexibility, and scale of production.</p>	3	3+2 = 5

<p>Q3</p>	<p>A company planning to manufacture electric vehicles like Tata Nexon EV is evaluating different locations for setting up its new plant. It is considering factors such as proximity to raw materials (batteries and components), availability of skilled labour, transportation costs, government incentives, and access to markets. At the same time, rising logistics costs and regional infrastructure differences are influencing the decision.</p> <p>a) Analyze how the firm should decide on an optimal plant location.</p> <p>b) Discuss the key factors affecting plant location and evaluate how choosing the wrong location could impact cost efficiency, and competitiveness.</p>	<p>4</p>	<p>2+3 = 5</p>
<p>Q4</p>	<p>A company operating in both manufacturing and service sectors produces consumer electronics such as smartphones while also offering after-sales services like repair and customer support. The design of the physical product focuses on features, quality, durability, and cost efficiency, whereas service design emphasizes customer experience, responsiveness, and customization. In this context, compare the design of products with the design of services by analyzing their key differences and similarities.</p> <p>Evaluate how factors like tangibility, standardization, customer interaction, and quality measurement influence the design process in both cases.</p>	<p>2</p>	<p>5</p>
<p>Q5</p>	<p>A manufacturing firm producing consumer goods is preparing its production plan for the next quarter. It must decide the quantity to be produced, scheduling of machines, allocation of labour, and management of raw materials to meet expected demand while minimizing costs. However, fluctuations in demand and limited resources make planning more complex.</p> <p>a) Explain the concept of production planning and compare its key components such as routing, scheduling, and loading.</p> <p>b) Discuss how effective production planning helps in improving efficiency and reducing costs.</p>	<p>3</p>	<p>3+2 = 5</p>