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Plot No. 2, Knowledge Park-III, Greater Noida (U.P.) –201306

POST GRADUATE DIPLOMA IN MANAGEMENT (2025-27)
END TERM EXAMINATION (TERM-III)

Subject Name: **Production Planning and Control** Time: **02.00 hrs**
Sub. Code: **: PGO31** Max Marks: **40**

Note: All questions are compulsory. Section A carries 12 marks: 6 questions of 2 marks each, Section B carries 18 marks having 3 questions (with internal choice question in each) of 6 marks each and Section C carries 10 marks one Case Study having 2 questions of 5 marks each.

Kindly write the all the course outcomes as per your TLEP in the box given below:

CO#	Statement of Course Outcomes	Bloom's Taxonomy
CO1	To understand the theoretical and basic elements of production planning and control. Recognize the practices of production planning systems to meet the customers' and stakeholders' expectations.	Remember Understand
CO2	Apply theoretical knowledge in key decision-making areas like aggregate planning, master production scheduling, Inventory and capacity planning, and project management for effective operation management	Application Analysis Create
CO3	Develop the ability to assess and solve production planning-related problems effectively and efficiently	Understand Create
CO4	Analyze the production planning with mathematical models and IT tools for improving overall business performance.	Analysis Evaluate
CO5	Analysis and interpretation of production and planning theories in real case study examples	Application Create
CO6	Scenarios and techniques to make the production with precise control and make the system highly efficient	Understand Evaluate

SECTION - A

Attempt all questions. All questions are compulsory. **2×6 = 12 Marks**

Questions	CO	Bloom's Level
Q. 1: (A). A manufacturing company is facing frequent production delays, high inventory costs, and low customer satisfaction. The management realizes that their Production Planning and Control (PPC**)** system is not functioning effectively. Discuss any two production control techniques to manage their production.	CO1	BL-1
Q. 1: (B). A company manufacturing air conditioners experiences seasonal demand. Demand is high in summer and low in winter. The company is facing problems of overproduction in winter and shortage in summer. Discuss any two qualitative methods of demand forecasting.	CO-1	BL-1

Q. 1: (C). A company manufactures electric kettles using an assembly line process. The production manager observes that some workstations are overloaded while others remain idle, causing delays. Identify the problem related to line balancing in this situation.	CO-1	BL-1
Q. 1: (D). Explain the importance of demand forecasting in production planning and control (PPC**).** How does inaccurate forecasting affect inventory levels, production scheduling, and overall business performance with special references to a FMCG sectors	CO-2	BL-2
Q. 1: (E). A retail company notices that its total inventory cost is increasing despite stable sales. The company maintains high safety stock due to uncertainty in demand and supplier delays. Analyze the situation and suggest how the company can reduce its holding, ordering, and stockout costs without affecting customer service.	CO-2	BL-2
Q. 1:(F). A retail company collects large amounts of sales data from its stores over the past five years**.** The management wants to understand past sales trends and also forecast future demand for better decision-making. How can the company use descriptive analytics and predictive analytics in this situation? Explain the role of each type of analytics and how they can improve business performance and planning.	CO-2	BL-2

SECTION – B

All questions are compulsory (Each question has an internal choice. Attempt anyone (either A or B) from the internal choice) **6 x 3 = 18 Marks**

Questions	**CO**	**Bloom's Level**
Q. 2: (A). Define the Johnson's rule of Sequencing. Five jobs to be processed on each of the two machines A and B in the technological order AB. Processing times are listed below. Find the optimal job sequence so as to minimize the total elapsed. Also find the idle time for the machine and waiting time for the jobs. Job : 1 2 3 4 5 Time on A : 5 1 9 3 10 Time on B : 2 6 7 8 4	CO-3	BL-3
Or		
Q. 2: (B). A manufacturing company produces electric fans. Over the past 12 months, it has collected data on monthly sales, machine utilization, and seasonal demand patterns. Using this data, the company predicts a 25% increase in demand during the summer season**.** How can the company use predictive analytics to adjust its production plan?	CO-3	BL-3
Q. 3: (A). Battery Wholesale, Inc., purchase batteries for Rs. 14 each and it cost Rs 11 to process an order. The company sells about 12,000 of a particular type of battery per year at a uniform rate. The order lead time is 3 days. The holding cost is estimated to be 24 percent of the item cost per year. Determine the EOQ, The	CO-4	BL-3

total cost and the reorder level. **Or** **Q. 3: (B).** A company has implemented an Enterprise Resource Planning (ERP) system that integrates production, inventory, and sales data. Recently, the system detected that raw material stock is running low while customer orders are increasing. How does ERP help in making data-driven decisions in this situation?	CO-4	BL-3
Q.4: (A). A bottled water company produces thousands of units daily using a continuous production system. Earlier, it maintained large inventories, leading to high storage costs and wastage. The company now shifts to a Just-In-Time **(**JIT) system where materials are ordered only when needed. However, during peak summer demand, the company faces shortages due to delayed supplier deliveries. How does JIT help the company improve efficiency and reduce waste in high-volume production?	CO-5	BL-4
Or **Q.4:(B).** "Production control is the key to the successes of a business organization". Discuss this statement listing various functions carried out under production control and state their purpose in brief.	C0-5	BL-2

SECTION - C

Read the case and answer the questions **5×02 = 10 Marks**

Questions	**CO**	**Bloom's Level**
Q. 5: Zenith Auto Components Ltd. is a mid-sized manufacturing company based in India that produces precision components for automobile manufacturers. The company supplies gears, shafts, and brake assemblies to major automotive OEMs. Over the past two years, Zenith has experienced rapid growth in demand due to increased automobile production. However, this growth has exposed several inefficiencies in its Production Planning and Control (PPC) system. Problem Situation 1. Demand Fluctuation The company receives highly variable monthly orders from clients. For example: • January: 8,000 units • February: 12,000 units • March: 6,500 units This variability creates difficulty in forecasting and planning. 2. Poor Production Scheduling Production schedules are prepared manually and often revised at the last minute. As a result: • Machines remain idle at times • Overtime costs increase	CO-6	BL-5

- Delivery deadlines are missed

3. Inventory Issues

Zenith faces both:

- Excess raw material inventory (leading to high carrying cost)
- Frequent stockouts of critical components

For example:

- Steel rods stockpile lasts for 3 months
- Bearings frequently go out of stock, halting production

4. Inefficient Shop Floor Control

The shop floor lacks real-time monitoring. Supervisors rely on manual reporting, which leads to:

- Delayed identification of bottlenecks
- Poor coordination between departments
- Increased work-in-progress (WIP) inventory

5. Lack of Integration

The company does not use an integrated ERP system. Departments such as:

- Procurement
- Production
- Sales

operate independently, causing miscommunication and planning errors.

Actions Taken by PPC Department

To address these challenges, Zenith introduced several PPC improvements:

1. Demand Forecasting

- Adopted statistical forecasting techniques
- Used past sales data to predict future demand

2. Aggregate Planning

- Created monthly production plans based on demand trends
- Balanced workforce and machine capacity

3. Inventory Control Techniques

- Implemented Economic Order Quantity (EOQ)
- Adopted ABC analysis to prioritize inventory items

4. Scheduling Improvements

- Introduced Gantt charts for better scheduling

• Used priority rules (FIFO, SPT) for job sequencing **5.** Shop Floor Control • Installed real-time tracking systems • Reduced WIP by improving workflow **6**. ERP Implementation • Integrated all departments using an ERP system • Improved coordination and data accuracy **Questions:** **Q. 5: (A).** Analyse the major PPC problems faced by Zenith Auto Components Ltd. and suggest how each issue can be resolved using appropriate PPC techniques. **Q. 5: (B).** Evaluate the impact of implementing ERP and improved scheduling on production efficiency and inventory control. Support your answer with examples from the case.		

Kindly fill the total marks allocated to each CO's in the table below:

COs	Marks Allocated	Questions
CO1	6	
CO2	**6**	
CO3	9	
CO4	9	
CO5	5	
CO6	5	

(Please ensure the conformity of the CO wise marks allocation as per your TLEP.)

Blooms Taxonomy Levels given below for your ready reference:

L1= Remembering
L2= Understanding
L3= Apply
L4= Analyze
L5= Evaluate
L6= Create