

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

**POST GRADUATE DIPLOMA IN MANAGEMENT (2019 -21)**  
**MID TERM EXAMINATIONS (TERM -IV)**  
**Academic Session- 2020-21**

Subject Name: Production Planning and Control  
Sub. Code: PGO06

Time: 01.30 hrs  
Max Marks: 20

**Note:**

- 1. Writing anything except Roll Number on question paper will be deemed as an act of indulging in unfair means and action shall be taken as per rules.**
- 2. All questions are compulsory in Section A, B & C. Section A carries 1 Case Study of 8 marks. Section B carries 3 questions of 2 marks each and Section C carries 2 questions of 3 marks each.**

**SECTION – A 04+04 = 08 Marks**

**Q. 1: Case Study: Amul: The Taste of India**

Small producers of milk in the state of Gujarat established Amul Dairy in 1946. This was a reaction to the inefficient, corrupt monopoly (Polson) in place at that point of time. The objective was to ensure that the small fragmented milk producers received the maximum possible remuneration while creating low cost high quality products for consumers, while eliminating the middlemen. Ensuring availability and providing great service to both the suppliers and consumers was of great importance as well. Amul, plant in Anand in Gujarat has capacity to about 14 million liters daily, up significantly in just a few years. That's providing opportunity for the cooperative's three million milk producers to lift output and meet increasing demand for healthy, nutritious food.

Dairies work on demand forecasts to get maximum plant output. Longer batch runs are often planned every day to achieve high levels of resource and capacity utilization.

With customer demand becoming diverse, smaller batches of different products are expected by customers today, with increased frequency of delivery. Smaller batches bring additional operational constraints such as sequencing, cleaning time, etc., that must be accounted for, which is making plant teams change their schedule frequently. Schedule attainment, as a result, is poor in many dairies. Planning and scheduling in dairy are not simple today and have a direct impact on profitability. For the Dairy Industry the key is to balance the milk supply with an optimal product mix, taking into account market and pricing fluctuations, processing constraints and optimal batch sizes / minimising changeovers, while building inventory to meet demand – all the while maximising profit. Operations will look at ways of adjusting and balancing the workload over time. In an ideal scenario all the possible options for capacity adjustments would be built into the supply chain model and will be automatically addressed. This could be:

- The use of overtime
- The use of additional shifts
- Optimal use of resources
- Optimal batch sizing to maximise productivity whilst minimising changeovers

**Increasing the Supply of Milk by Amul**

To facilitate the supply of milk, the District milk unions provide various aids to the milk producers and farmers (like cattle-feed, veterinary aid, technical training) obtained at a low cost due to large scale sourcing, to increase supply. Aids are also aimed at overall community development.

Bridging Gaps in a Fragmented/Unstable Supply Side Market

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Given the fragmented nature of the producers, supply tends to vary based on various factors, but demand remains fairly constant. The unions have invested in cold storage facilities to ensure that surpluses can be stored and redistributed to village level centers that are facing a shortage of supply, efficiently reducing supply instabilities.

### **Technology Initiatives**

An automatic Milk Collection System was established that could identify and test the quality/quantity of milk. This leads to time saving since over 1000 producers enter a village cooperative each day and increased transparency. Automation for milk reception, pasteurization and for monitoring and control while transferring milk, cream and butter milk from reception tanks to packaging machines at Amul's Dairy III. Automation determines percentage of milk, cream fat, and non-fat solids, while queue-handling ensures prompt refilling of silos to maintain continuity without delays.

And as part of Amul's integrated plant systems, ABB developed a customized cleaning-in-place (CIP) solution to sanitize equipment such as the silos, milk and cream pasteurizers, cream tanks, dispatch lines and butter-making machines. The new automation and control systems at the organization ensured uninterrupted processing of more than a billion litres of milk. Amul's growing output provided an opportunity for the cooperative's three million milk producers to lift their own output and meet increasing demand for dairy products. Systems provide tools like batch execution control and recipe-based CIP control which lets reduce cycle cleaning times without shutting down production. Investing in robot automation helps stay competitive and use the staff more efficiently.

Enterprise-wide Integrated Application Systems were used to align various sub software systems in place. A Geographic Information System was also established to view supply disparities in real time. Cyber stores have been recently launched as well.

Q1A. What are the production planning and control challenges in Dairy Industry?.

Q1B. How Amul overcome the challenges of Production and produced the high quality value added products profitably with the use of technology?

### **SECTION – B 02×03 = 06 Marks**

Q. 2: Discuss the concept and elements of MRP.

Q. 3: Explain the difference Types of Production Systems with suitable examples?

Q. 4: What is Perpetual Inventory System and how RFID technology facilitates to track the inventory?

### **SECTION – C 03×02 = 06 Marks**

Q.5 One of the top-selling items at a gift shop are autographed pictures of MS Dhoni. Sales are 18 pictures per week, and the purchase-price from the supplier is Rs 400 per picture. The total cost of placing an order from Cindy is Rs 200. Annual holding costs are Rs700 per picture. There are 50 weeks in a year. What size orders should the gift shop place?

Q. 6 Suppose as production manager, you have following demand forecasting schedule from sales:



# GL BAJAJ

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Approved by A.I.C.T.E., Ministry of HRD, Govt. of India

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Quarter Output(Kg)	1	2	3	4	Total
Demand	100000	75000	85000	120000	380000

Inventory carrying costs	Rs 1 per Kg
Regular production cast	Rs 100 per Kg
Hiring costs	Rs 5000/worker
Firing costs	Rs 10000/worker
Capacity per worker	Rs 1500 per Quarter
Beginning workforce	80

Please suggest suitable aggregate production planning strategy out of Level Strategy and Chase Strategy basis on cost analysis.