

Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY
MBA - SEMESTER - II EXAMINATION - WINTER 2025

Subject Code: 1529605

Date: 21-01-2026

Subject Name: Production & Operations Management

Time: 02:30 PM TO 05:30 PM

Total Marks: 70

Instructions

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. USE of SIMPLE calculators AND non-programmable scientific calculators are permitted.**

	Marks
Q.1 ALL 7 Questions must be Compulsory.	14
(a) JIT	
(b) Product Layout	
(c) Six Sigma	
(d) Pareto analysis	
(e) Cycle Time	
(f) Outsourcing	
(g) Reverse Engineering	
Q.2 (a) Describe the factors that should be taken into account in deciding the location for a cement plant.	07
(b) Illustrate the different types of manufacturing processes. Explain any two in detail with its pros and cons.	07
OR	
(b) Define Aggregate Production Planning. Discuss various strategies of Aggregate Production Planning	07
Q.3 (a) What is Plant Layout? Write about any two types of plant layout.	07
(b) What do you mean by Six Sigma ? Describe the various analytical tools associated with Six Sigma	07
OR	
(a) Briefly explain with examples, 1) Rough cut capacity planning 2) Cost of Aggregate production planning and 3) Material requirement planning in cost reduction strategies for manufacturing plants	07

- (b) To complete the wing assembly for an experimental aircraft, Jim Gilbert has laid out the seven major activities involved. These activities have been labeled A through G in the following table, which also shows their estimated completion time (in weeks) and immediate predecessors. 1. Draw network diagram. 2. Calculate ES, LS, EF, LF and slack 07

Activity	Expected time (in weeks)	Immediate Predecessors
A	2	—
B	3	—
C	5	A
D	9	B
E	5	C,D
F	5	D
G	2	E

- Q.4 (a) Explain Master Production Schedule (MPS) with appropriate example. 07

- (b) What is product Design? Describe the various steps to develop the product designing with suitable example 07

OR

- (a) Discuss the any three Inventory Management methods used in manufacturing units. 07

- (b) What is Industrial Safety? What are the steps to be taken to prevent accidents in any organisation. 07

Q.5 Gillette's Total Quality Management System. Gillette began its global operations in 1905 when it opened a manufacturing plant in Germany. This global strategy and success saw the firm extend its operations to Latin America. Argentina was a potential market after tariffs and business policies were revised. Having operated under an unfavorable regime, the firm perceived future competition and decided to create competitive advantages. Key figures in the firm, such as Carlos Rotundo and Jorge Micozzi, suggested better quality as the solution to the market issues. The management had to change the organizational culture which was not strategic for the future market circumstances. Rotundo had already begun creating a new organizational culture when Micozzin came up with the idea of total quality management (TQM) that made Gillette Argentina the most successful affiliate in Latin America.

Gillette gets employees to take on the new system In a firm where decision-making is solely the responsibility of leaders, such that the employees have to act as the subjects to them, it is likely that the employees would not readily accept the adoption of total quality management (TQM). This is because TQM requires them to take higher roles, become self-dependent and consider themselves as the owners of the firm. It is apparent that Gillette had earlier managed its activities in a manner that left the managerial roles such as decision making and steering initiatives exclusively to the leaders. Therefore, the effort to adopt TQM compelled leaders to take measures that would prepare the employees better for the change. These measures involved several initiatives especially triggered by several key figures in the firm.

The very first initiative Gillette took was to hire the Organizational Dynamics Inc (ODI) as a consulting and training firm. The firm became the key source of

information and motivation for the Gillette Latin America management. It can be argued that the source of a successful organizational change begins with leaders who in turn transfer it to employees. This means that the employees would rarely have accepted an initiative that their leaders did not support appropriately. The consulting firm played a central role in preaching the benefits of TQM to the leaders. Indeed, the firm reinforced the idea Rotundo had already started to instill in Argentina. Organizational Dynamics Inc. developed the quality initiative and recommended the creation of a quality structure. Secondly, Gillette offered training to the employees as a way of preparing them for TQM system. One of the landmark training was FADE that prepared employees for quality action teams. The specialized training involved four phases of problem solving: focus, analyze, develop and execute.

The focus phase was concerned with the development of a problem statement; the analyze phase dealt with the use of data to understand the magnitude of the problem; the develop phase involved the determination of a solution and implementation plan; and the execute phase was about implementing the plan and measuring its impact. In addition to FADE training, the employees received training in seven basic quality tools as well as brainstorming, force field analysis and cost benefit analysis. Furthermore, training was extended to management and leadership levels. The Argentine directors, managers and other officials were trained by ODI as trainers of the rest of the organization. The teams were allocated facilitators who received training on leadership development.

Team leaders were trained in areas relating to group dynamics, effective meetings, leadership skills and group conflicts. As a matter of fact, training was the backbone of the TQM process. Most of the members who got training became experts in their respective areas and eventually steered the process towards success. Another way that Gillette used to prepare employees for the TQM process was through workshops. Through the leadership of Walker, workshops were conducted with all employees to inform them about the changes that would take place. The staff got information about the new working style and culture to be attained through TQM. Team sponsors were identified and their roles explained to the staff. They were to support the teams in any way needed including helping them to attain their objectives with recognition of their empowerment. Other workshops that Walker would offer involved problem-solving and statistical analysis, and at the same time inspiring everyone. Finally, Gillette endeavored to meet the challenges of quality that the employees faced. The newly hired quality manager emerged to be a successful preparer of the team members and organizer of TQM process.

- (a)** Examine and analyze the main purpose of Total Quality Management **07**
- (b)** Identify and describe the seven key pillars of total quality management. In your view which pillars from the seven is followed by this organization **07**

OR

- (a)** Explain Employee Involvement. What are the advantages and disadvantages of employee involvement in decision making? **07**
- (b)** In addition to those already discussed in the case, explain various other quality tools that could be utilized by the company. **07**
