

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

POST GRADUATE DIPLOMA IN MANAGEMENT (2025-27)
MID TERM EXAMINATION (TERM -I)

Subject Name: **Total Quality Management**

Time: **01.00 hrs**

Sub. Code: **PGO 32**

Max Marks: **20**

Note: All questions are compulsory. Read the case and answer the questions

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

CO1- Explain TQM principles, quality philosophies (Deming, Juran, Crosby), and global quality frameworks (ISO, EFQM, Malcolm Baldrige). (L1, L2)
CO2- Apply statistical process control tools, control charts, acceptance sampling, and process capability analysis to monitor and improve process quality. (L2, L3)
CO3- Use quality improvement tools such as Six Sigma (DMAIC), Lean tools, Kaizen, Fishbone Diagram, and Pareto Analysis to solve operational problems. (L3, L4)
CO4- Design basic quality management systems incorporating customer focus, risk-based thinking, compliance requirements, and documentation practices. (L4, L5)
CO5- Evaluate quality decisions considering ethics, sustainability, ESG principles, and stakeholder value creation. (L5, L6)
CO6- Demonstrate ability to lead quality improvement initiatives using data-driven decision making, team collaboration, and performance measurement systems. (L6)

Read the case and answer the questions

XYZ Pvt. Ltd.

(An assumed firm as a reference for answering all the questions)

XYZ is an auto plastic system firm which captures customer complaints about painted parts defects. Leadership formed dedicated Six-sigma problem-solving team. Trained quality analysts were assigned data measurement tools. Team studied paint process variables and standardized best setting as benchmarks.

Plastic modules in this organization work among the following temperature ranges: 71 degrees, 72.6 degrees, 73 degrees and 74.2 degrees as industrial minimum average is 70.5 degrees and maximum average is 74 degrees. These are usually termed as LSL (Lower specific limit) and USL (Upper specific limit) in the world of auditing and assurance.

After analysing the data, managers realized that there are two major reasons of discrepancies in the auditing sheets. First, employees close the ticket raised by stakeholders using diplomatic communications and shifting accountability, this results into false ticket closures without any actual resolution of problem. Second, wrong data entries are also done at times. If we consider quarterly data, approximately seven wrong entries occurred five times but only got detected three times resulting into a severity impact of 8/10. On the other hand, Incorrect closure of tickets as mentioned earlier only got detected 2 times but occurred 9 times with a severity impact of 9/10.

This was realized after a long time not during the on-going quarter as different department uses different tools to store, analyse and recommend about data. Integration of everything at one place took time and management became aware after all the consistent gaps in several quarters. There may be penalties further if such gaps are not resolved timely, this is hampering the overall culture of the organization and need better strategies for managing quality aspects.

Discussion Questions:

Q1. Make a flow chart showcasing the usage of DMIAC to find root causes and fix process variation in the firm XYZ.

(CO2) (2 Marks)

Q2. What would be the components of PDCA for XYZ firm? Draw architecture.

(CO2) (2 Marks)

Q3. If Statutory audit is conducted by Government of India for firm XYZ, What major compliances would be tested? Explain.

(CO2) (2 Marks)

Q4. Calculate sigma levels for upper and lower limit based on the data given for the firm XYZ and interpret your calculation in terms of “ppm”. Justify ppm closeness to ideal sigma levels required in the world of “Total quality management”.

(CO2) (2 Marks)

Q5. Conduct FMEA analysis for the organisation XYZ by evaluating RPN (Risk priority number) and give your final recommendation.

(CO2) (2 Marks)

Q6. (A). Draft a project charter by assuming that you need to shift the old plant of this plastic module firm to a new location due to increasing number of employees, need of more advanced infrastructure and construction of modern amenities.

(CO3) (2 Marks)

Q6. (B). Find out the most critical path or multiple critical paths depending on the situation based on following few of the activities executed for project—moving from old site to new site:

Preparing foundations (within 4 days), making door frames (within 3 days), erecting walls (within 9 days), plaster ceiling (within 3 days), erecting roof (within 2 days) and installing-painting all components (within 5 days).

(CO3) (2 Marks)

Q7. Can control tower help for justifying timely gap detection and analysis for the firm mentioned in the above use-case? If yes/no, why? Justify.

(CO1, CO2, CO3) (2 Marks)

Q8. If after implementing control tower, you realise plastic modules had component level deviations from the standardised benchmarks. For instance, among all the components, an atmospheric pressure of 300 had to be followed as a target benchmark with a mean tolerance of ± 10 atm. Atmospheric pressure for most faulty modules was found to be 325 atm. Resulting cost of such defective plastic modules is \$2000. Calculate Taguchi loss.

(CO1) (2 Marks)

Q9. What will be the importance of evaluated Taguchi loss for the component level auditings of plastic modules? Explain in short.

(CO1) (2 Marks)

Q10. Why would green belt of Six Sigma be relevant if the firm XYZ targets to expand operations in African countries? List few challenges which can be resolved.

(CO1) (2 Marks)

COs	Blooms Taxonomy Levels	Marks Allocated
CO1	L1, L2	06 Marks
CO2	L2, L3	10 Marks
CO3	L3, L4	04 Marks

Blooms Taxonomy Levels given below for your ready reference:

L1= Remembering

L2= Understanding

L3= Apply

L4= Analyze

L5= Evaluate

L6= Create