UNIVERSITY OF PETROLEUM & ENERGY STUDIES
Online End Semester Examination – Dec, 2020

Program: MBA (AVM/IB/BA/OG/PM/LSCM)   Semester: III
Subject/Course: Total Quality Management   Max. Marks: 100
Course Code: TMLS 8204   Duration: 03 Hours

SECTION A
1. Each Question will carry 5 Marks
2. Instruction: Complete the statement / Select the correct answer(s)

Q.No		COs
1	From the following options select the new planning tools; a. Tree diagram b. Cause and effect diagram c. Matrix diagram d. Control charts e. Relationship diagram.	CO 1
2	Which of the following is/are not objective of business process analysis; a. Identify the factors that make it difficult to understand the process b. Remove bottlenecks c. Empower employees d. Ascertain the allocation of resources e. Check out process time	CO 1
3	Mention any five dimensions of defining product quality _____, _____, _____, _____ and _____.	CO 2
4	Mention the four types of benchmarking - _____, _____, _____ and _____.	CO 3
5	Mention any five tools for six sigma and quality improvement - _____, _____, _____, _____ and _____.	CO 4
6	Which of the following cost of quality is not correctly mapped; a. Appraisal costs - inspection equipment b. Prevention costs - Training of employees c. Internal failure costs - material and product losses d. External failure costs - cost due to excess scrap	CO 3

SECTION B
1. Each Question will carry 10 Marks
2. Instruction: Write short / brief notes

7	Discuss in detail about any two process mapping tools.	CO 4
8	Explain the importance of employee empowerment for any organization in achieving	CO 2

	TQM goals. Also discuss the role of management in empowering employees.	
9	Discuss all the steps involve in Taguchi's experiment.	CO 2
10	Discuss each phase of DMAIC methodology of Six Sigma.	CO 3
11	Describe the requirements of ISO 14001:2015.	CO 1

SECTION C
1. Each Question will carry 20 Marks
2. Instruction: Write long answer.

12	Tata Motors, previously known as Tata Engineering and Locomotive Co Ltd (TELCO), is one of the largest companies in the Tata Group, and one of India's largest business houses. Tata Motors is India's leading commercial vehicle manufacturer and the third largest passenger car manufacturer. The company is the sixth-largest truck manufacturer in the world. Tata Motors recently received the Balanced Scorecard Collaborative Hall of Fame Award for having achieved a significant turnaround of its overall performance. A comprehensive quality improvement and cost-cutting initiative in September 2000 has played an important role in the company's turnaround, from a loss of Rs 500 million in the year ended March 2001 to a profit of Rs 28 million in the first quarter of 2002–2003. **Business Segments** Tata Motors has two main business segments: Commercial Vehicle Business Unit (CVBU) and Passenger Car Business Unit. **The Cost of Success** The people at Tata Engineering do not fancy the phrase "cost cutting" for no other reason than that they see it as inadequate, even misleading in their context. "Cost erosion" is a preferred terminology at India's largest automotive company, simply because it captures the breakthrough exercise that has shaved more than Rs 600 million off Tata Engineering's expenses over the last two years. The big positive of the cost-erosion initiative goes beyond the statistics of money saved. It is going to be a permanent feature of Tata Engineering's agenda for the future. However, the problem is that the going gets tougher on this score with every passing month, because finding new costs to eliminate becomes ever more difficult. The cost-erosion initiative, which began in April 2000, is arguably the most important element in a remarkable revival that has seen Tata Engineering recover from a loss of Rs 500 million in the year ended March 2001 to a profit of Rs 28 million in the first quarter of 2002–2003. Prakash M. Telang, senior vice president (manufacturing), was designated the "cost-erosion champion" and put in charge of the entire initiative. Four specific areas were identified: a) Direct material costs (which constitute roughly 65 per cent of all costs); b) Variable conversion costs (power, fuel, water, tools, etc.); c) Fixed costs (labour, marketing, corporate expenses, plant operations, research and development); d) Financial restructuring (working capital, debt restructuring, balance sheet, etc.). Mr. Telang says, "Everybody had a cost-erosion target built into his area of work and we saw a cascading effect take hold." Three-tiered teams—members, leaders and champions—were set up at the plant level to implement, drive and monitor the exercise across the organization. Their task began with spreading the cost reduction message,	CO 4

emphasizing its importance to bringing the company back to good health, and defining the methods to accomplish it. The company's union was co-opted to communicate the programme and the house journal did the same.

Quality Management

Tata Motors started a comprehensive quality improvement initiative in September 2000. The initiative played an important role in the company's turnaround. Every year, about a quarter of Tata Motors' workforce went through training courses, which were rated highly in the Indian engineering industry. The company's quality management project and its cost erosion exercise have run concurrently, and each has helped the other. For one, its people understood that cutting costs did not mean cutting corners. The same teams and the same people were involved in both exercises. This led to many win–win situations. With operating margins in its flagship commercial vehicle operations now up at about 13 per cent, Tata Engineering can afford to breathe easy. Where two years back it looked dark as tar, the future now promises the rewards of a war that seems well and truly won.

Questions:

a) What is the difference between cost cutting and cost erosion?
b) What were the benefits accruing to Tata Motors on implementing the cost-erosion exercise and the quality management project?

OR

Computer upgrade times (in minutes) are being evaluated. Samples of five observations each have been taken, and the results are as listed. Determine upper and lower control limits for $\bar{X}$- Chart and construct $\bar{X}$- Chart for this process. Decide if the process is in control. (The value of A_2 in the case of five observations is 0.58).

Samples	Observations				
	1	2	3	4	5
1	79.2	78.8	80.0	78.4	81.0
2	80.5	78.7	81.0	80.4	80.1
3	79.6	79.6	80.4	80.3	80.8
4	78.9	79.4	79.7	79.4	80.6
5	80.5	79.6	80.4	80.8	78.8
6	79.7	80.6	80.5	80.0	81.1

ANSWERS