Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – MAY 2025

Date: 31-05-2025 **Time:** 01:00 pm – 04:00 pm

School: SOM-PG	**Program:** MBA	
Course Code : MBA2031	**Course Name:** Total Quality Management	
Semester: IV	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	25	25	25	25	-

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 3 marks. **10Q x 3M=30M**

1.	Describe the meaning of the process capability index Cp and how it is calculated. What does a Cp value of less than 1.0 typically indicate?	**3 Marks**	**L1**	**CO1**
2.	Explain the difference between variables data and attributes data as they relate to control charts. For each type of data, provide examples of quality characteristics that might be monitored using control charts.	**3 Marks**	**L1**	**CO1**
3.	Describe the purpose of the 5S methodology and explain how the principles of Seiri (Sort) and Seiton (Set in Order) contribute to a more efficient workspace, providing examples.	**3 Marks**	**L1**	**CO1**
4.	Describe Statistical Process Control (SPC) and explain the primary purpose of using control charts within this framework.	**3 Marks**	**L1**	**CO1**
5.	Explain the purpose of using Process Mapping using SIPOC and the meaning of each term.	**3 Marks**	**L1**	**CO1**
6.	Define 'Acceptance Sampling'. What are some of the common actions taken by the customers if the inspected lot is rejected while conducting 'Acceptance Sampling'?	**3 Marks**	**L2**	**CO2**
7.	What is meant by 'Common Cause Variation' and 'Special Cause Variation'? Give one example for each of the type.	**3 Marks**	**L2**	**CO2**

8.	What is meant by DPMO? What is the allowable number of defects if a process is a 'Six Sigma Process'?	**3 Marks**	**L2**	**CO2**
9.	Define Quality Function Deployment(QFD). What is the purpose of this tool in an organization.	**3 Marks**	**L2**	**CO2**
10.	Describe the Pareto Principle and explain how a Pareto Chart can be used by an organization to prioritize issues and focus on the most significant factors for improvement.	**3 Marks**	**L2**	**CO2**

Part B

Answer the Questions. **Total Marks 40M**

11.	**a.**	A school administrator wants to reduce student absenteeism. Over one month, the reasons for 100 absences are recorded as follows: **Illness: 45** **Family emergency: 20** **Transportation issues: 15** **Lack of interest: 10** **Weather: 5** Construct a Pareto chart using this data. Identify which reasons should be prioritized for intervention according to the Pareto principle.	**10 Marks**	**L2**	**CO 1**
		Or			
12.	**a.**	Draw a basic sketch of a control chart and label its key components, including the central line, upper control limit (UCL), and lower control limit (LCL). Explain what each of these components represents in the context of process variation.	**10 Marks**	**L2**	**CO 1**
13.	**a.**	Describe the DMAIC procedure that is central to Six Sigma projects, outlining the purpose of each of the five phases. Explain the expected outcome (objective) of each step.	**10 Marks**	**L2**	**CO 2**
		Or			
14.	**a.**	Briefly describe three of the 7 New Quality Control (QC) Tools, explaining their primary purpose and providing a potential application for each tool in a business setting	**10 Marks**	**L2**	**CO 2**
15.	**a.**	Using the following data, calculate the Mean, Standard Deviation, Upper Control Limit (UCL) and Lower Control Limit (LCL). Draw or Construct a Control Chart using the calculated values. **Sample No.** 1 2 3 4 5 6 7 8 9 10 **Diameter (mm)** 10.5 10.9 10.1 10.8 10.6 9.5 9.9 10.9 10.3 9.5	**10 Marks**	**L3**	**CO 2**
		Or			

16.	**a.**	Explain briefly the step-by-step procedure to construct a SIPOC. Construct a SIPOC for preparing and serving Tea showing at least 5 process steps.	**10 Marks**	**L3**	**CO 2**

17.	**a.**	Outline and briefly describe the different roles and responsibilities within a Six Sigma organizational structure, including Champions, Master Black Belts, Black Belts, and Green Belts	**10 Marks**	**L3**	**CO 2**
		Or			
18.	**a.**	Expand the term FMEA and explain what is meant by FMEA? What are the benefits of conducting FMEA? What is meant by Risk Priority Number (RPN) and how is it calculated?	**10 Marks**	**L3**	**CO 2**

Part C

Answer all the Questions. Each question carries 15marks **2Q x 15M=30M**

19.	**a.**	A customer visits a Bank to get a housing loan. He meets a staff and requests for a housing loan. The staff explains the procedure and gives the customer a form to fill up. The customer fills the form and hands over to the staff. The staff verifies the form and asks the customer to submit Identity, sanctioned plan, estimate for construction, income proof as well as Address proof. The customer submits the requested documents to the staff. The staff verifies the documents and approves the application. The staff then gets the Manager's approval. The staff completes the remaining formalities and the housing loan is sanctioned to the customer. Using this information, draw a SIPOC and construct an FMEA.	**15 Marks**	**L3**	**CO4**

20.	**a.**	Define 'Process Capability'. Write down the formula for calculating Cp and CpK. Calculate the Cp and CpK for the following process parameters. Conclude if the process is capable based on the results. Process Mean: 220 Minutes Process Standard Deviation: 0.760 minutes Design Specifications: 230 (+/- 3 minutes)	**15 Marks**	**L3**	**CO 4**