DEPARTMENT OF AEROSPACE ENGINEERING
19MEE304 Total Quality Management

IAE 2 Question bank

2-mark questions

Continuous Process Improvement

1. Define Continuous Process Improvement (CPI).
2. What are the key benefits of Continuous Process Improvement?
3. Name two popular methodologies used for Continuous Process Improvement.
4. How does Continuous Process Improvement contribute to Total Quality Management (TQM)?
5. Mention any two tools used for Continuous Process Improvement.

Case Studies on 5S and Kaizen

6. What are the five principles of 5S methodology?
7. Define Kaizen in the context of quality management.
8. How does the 5S technique help in workplace efficiency?
9. Give one example of an industry where Kaizen has been successfully implemented.
10. What is the main objective of the Kaizen philosophy?

Supplier Partnership - Partnering

11. What is meant by supplier partnership?
12. Give two benefits of partnering with suppliers.
13. Mention two key factors in building a strong supplier partnership.
14. What is the role of trust in supplier partnerships?
15. How does supplier partnership contribute to cost reduction?

Supplier Selection and Supplier Rating

16. What are the main criteria for supplier selection?
17. Define supplier rating in supply chain management.
18. How does supplier selection impact product quality?
19. Mention two key factors considered in supplier rating.
20. Why is continuous supplier evaluation important?

Statistical Fundamentals

1. Define statistics in the context of quality management.
2. What is the importance of statistics in Total Quality Management (TQM)?
3. Name two types of statistical data used in quality control.
4. What is the difference between descriptive and inferential statistics?
5. Define probability in statistical analysis.

Measures of Central Tendency and Dispersion

6. Name the three common measures of central tendency.
7. What is the difference between mean and median?
8. Define standard deviation and its significance.
9. How is range used as a measure of dispersion?
10. What does a high standard deviation indicate about a dataset?

Population and Sample

11. Define population and sample in statistical analysis.
12. What is the purpose of sampling in quality control?
13. Differentiate between random sampling and stratified sampling.
14. Why is a sample used instead of the entire population in quality studies?
15. What is sampling error?

Control Charts for Variables and Attributes

16. What is the purpose of a control chart?
17. Name two types of control charts used for variables.
18. What is the difference between control charts for variables and attributes?
19. Define upper control limit (UCL) and lower control limit (LCL).
20. What does it mean if data points fall outside the control limits?

Industrial Examples

21. Give one real-world example of quality control in the manufacturing industry.
22. How do airlines use quality control in aircraft maintenance?
23. Provide an example of a company that successfully implemented Six Sigma.
24. How do hospitals apply quality management techniques?
25. Mention an industry where process capability analysis is commonly used.

Process Capability

26. Define process capability index (Cp).
27. What does it mean if $Cp > 1$?
28. Why is process capability analysis important in manufacturing?
29. How is Cpk different from Cp?
30. What is the significance of a high process capability ratio?

5S Principles

31. Name the five principles of 5S methodology.
32. What is the objective of the 5S system?
33. How does the 5S technique improve workplace efficiency?
34. What does the ‘Seiso’ step in 5S stand for?
35. How does 5S contribute to waste reduction?

Six Sigma Process – Case Studies

36. What is the goal of the Six Sigma process?
37. Define DMAIC in Six Sigma methodology.
38. Mention one key benefit of Six Sigma in industries.
39. What does Six Sigma aim to reduce in a process?
40. Name an industry where Six Sigma has been successfully implemented.

New Seven Management Tools

41. List any two new seven management tools.
42. What is an Affinity Diagram used for?
43. Define an Interrelationship Diagram.
44. How does a Matrix Diagram help in decision-making?
45. What is the purpose of the Process Decision Program Chart (PDPC)?

16-mark questions

Continuous Process Improvement

1. Explain the concept of **Continuous Process Improvement (CPI)**. Discuss its importance in achieving quality excellence. Provide real-world examples of industries implementing CPI.

Case Studies on 5S and Kaizen

2. Explain the **5S methodology** in detail with its five principles. How does it contribute to workplace efficiency? Support your answer with a case study from an industry.
3. Discuss the **Kaizen philosophy** and its role in continuous improvement. Explain with a case study how Kaizen has improved productivity in an organization.

Supplier Partnership - Partnering

4. What is **Supplier Partnership**? Explain its benefits and challenges in the manufacturing industry. How does partnering with suppliers enhance product quality and cost efficiency?

Supplier Selection and Supplier Rating

5. Explain the **supplier selection process** with key criteria used for evaluation. Discuss how proper supplier selection impacts product quality and supply chain efficiency.
6. What is **supplier rating**? Discuss various methods used for supplier rating and how it helps in maintaining quality standards in industries.

Statistical Fundamentals

1. Explain the role of **statistics** in quality management. How do statistical methods help in improving process quality in industries?

Measures of Central Tendency and Dispersion

2. Define **mean, median, and mode**. Explain their significance in quality control with examples. Discuss how measures of dispersion like variance and standard deviation help in analyzing process variations.

Population and Sample

3. Differentiate between **population and sample**. Discuss various sampling techniques used in industrial quality control and explain their advantages and limitations.

Control Charts for Variables and Attributes

4. What are **control charts**? Differentiate between control charts for variables and attributes. Explain how they help in monitoring and improving process quality with suitable examples.

Industrial Examples

5. Discuss real-world **industrial examples** where statistical quality control techniques have been successfully implemented. Explain how companies have used statistical tools to improve product quality.

Process Capability

6. Explain the concept of **process capability analysis**. Discuss how Cp and Cpk are used to measure the capability of a process. Provide an industrial case study to support your explanation.

5S Principles

7. Explain the **5S methodology** in detail. How does it improve workplace efficiency and productivity? Discuss a case study where 5S was successfully implemented in an industry.

Six Sigma Process – Case Studies

8. What is **Six Sigma**? Explain the **DMAIC methodology** with a suitable industrial case study where Six Sigma implementation led to process improvement.

New Seven Management Tools

9. Explain the **New Seven Management Tools** used in quality management. Discuss their application in decision-making and problem-solving in industries.