

6E7115	Roll No. _____	Total No. of Pages : 2
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	B.Tech. VI-Sem. (Main/Back) Examination, April/May - 2026	
	Automobile Engineering 6AE5-13 Quality Management (EL. - II) ME, AE	

Time : 3 Hours

Maximum Marks : 70

Instructions to Candidates:

Attempt all Ten questions from Part A, Five questions out of seven questions from Part B and Three questions out of five questions from Part C.

Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and suitably and stated clearly. Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205).

PART - A

(Answer should be given up to 25 words only)

All questions are compulsory.

(10×2=20)

1. Define "Quality of Conformance".
2. List two dimensions of quality.
3. What is the difference between "Chance causes" and "Assignable causes" of variation?
4. Name any two of the "Magnificent Seven" tools of SQC.
5. Define the term "Fraction Non-conforming".
6. What is the primary purpose of a Quality Audit?
7. Briefly define the term "AOQL" in acceptance sampling.
8. What is the core focus of the ISO 14000 series?
9. Define "Reliability" in the context of failure models.
10. What does MTBF stand for?

PART- B

(Analytical / Problem solving questions)

Attempt any Five questions.

(5×4=20)

1. Explain the "Economics of Quality" and how it impacts a production system.
2. Describe the basic principles and statistical basis of a Control Chart.
3. Compare the use of X-bar charts with R-Charts for process control.
4. Explain the concept of Six Sigma and its importance in quality improvement.
5. Discuss the advantages of implementing a Quality Assurance system.
6. Describe the "Operating Characteristics (OC) Curve" used in acceptance sampling.
7. Explain the "Series" and "Parallel" device configurations in reliability evaluation.

PART - C

(Descriptive / Analytical / problem solving / design questions)

Attempt any Three questions.

(3×10=30)

1. Analyze the modeling of process quality. Discuss how frequency distributions and probability patterns are used to make inferences about process parameters ;
 2. Detail the various control charts for attributes (p, np, c, and u charts). Under what conditions should a manufacturer choose an attribute chart over a variable chart?
 3. Explain "Process Capability Analysis." How are capability ratios calculated and used to determine if a process is meeting design specifications?
 4. Discuss the fundamental concepts of ISO 9000. How does it differ from the Taguchi Method of Design of Experiments?
 5. Describe the common failure rate curve (Bathtub Curve). Explain how redundancy can be used as a strategy for reliability improvement
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