Quality Study Guide

1. Definitions of Quality

• Customer-Defined Quality: Meeting or exceeding customer expectations.

• Conformance to Specifications: How well a product meets design targets and tolerances.

• Fitness for Use: How well the product performs its intended function.

• Value for Price Paid: Usefulness of the product relative to its cost.

• Support Services: Judged by post-sale support (e.g., warranty, customer service).

• Psychological Criteria: Based on perception, prestige, or reputation.

• Manufacturing vs Service: Manufacturing focuses on tangible features; Service on intangible factors.

2. Costs of Quality

Category	Purpose	Examples
Prevention Costs	Prevent poor quality.	Quality planning, training, design, records.
Appraisal Costs	Uncover defects.	Testing, inspections, audits.
Internal Failure Costs	Defects before reaching customer	Scrap, rework, downtime.
External Failure Costs	Defects after reaching customer.	Complaints, returns, recalls, lost sales.

Key Principle: It is cheaper to prevent defects than to fix them after they occur.

3. Old vs. New Concept of Quality

Aspect	Old Concept (Pre-TQM)	New Concept (TQM)
Focus	Detection & Correction	Prevention
Approach	Reactive	Proactive
Responsibility	Quality Control Dept.	Everyone's Responsibility
Goal	Meet Specifications	Exceed Customer Expectations
Cost Emphasis	Inspection & Sorting	Total Cost of Quality
System	Separate Program	Integrated Philosophy

Timeline: Early 1900s: Inspection; 1940s: Statistical Sampling; 1960s: Organizational Quality Focus; 1980s+: Customer-Driven Quality (TQM)

4. Dimensions of Quality (Garvin's 8 Dimensions)

✔ Performance: Primary operating characteristics.

✔ Features: Supplementary characteristics.

✔ Reliability: Probability of non-failure.

✔ Conformance: Meeting standards.

✔ Durability: Operational life.

✔ Serviceability: Ease and speed of repair.

✔ Aesthetics: Sensory appeal.

✔ Perceived Quality: Inferred from reputation/brand.

5. Flow Charts

Definition: A flowchart visually represents the steps in a process.
Purpose: Shows how a process works, identifies bottlenecks, inefficiencies, and quality issues.
History: Introduced by Frank and Lillian Gilbreth in 1921.
Key Symbols:
- Oval: Start/End
- Rectangle: Process/Action
- Diamond: Decision
- Arrow: Flow direction
- Parallelogram: Input/Output
- Document: Report
- Cylinder: Database
- D-shape: Delay