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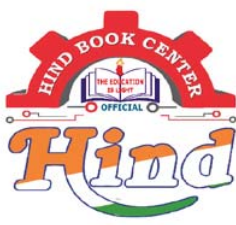
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ENGINEERING APTITUDE
Handwritten Notes
UPPSC-AE NOTES 2025

- **Quality Control, Production & Construction**
- **Types of Machinery Maintenance**
- **DRAWING AND SAFETY**
- **Intellectual Property Rights (IPR)**
- **ENGINEERING MATERIAL**
- **Human Health & Sanitation**
- **Role of Science Technology in Daily Life**
- **ENERGY & ENVIRONMENT**
- **GENERAL HINDI**
- **CLIMATE CHANGE**
- **ICT**

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ⓐ Quality Control, Production & Construction

ⓐ Type of Machinery Maintenance

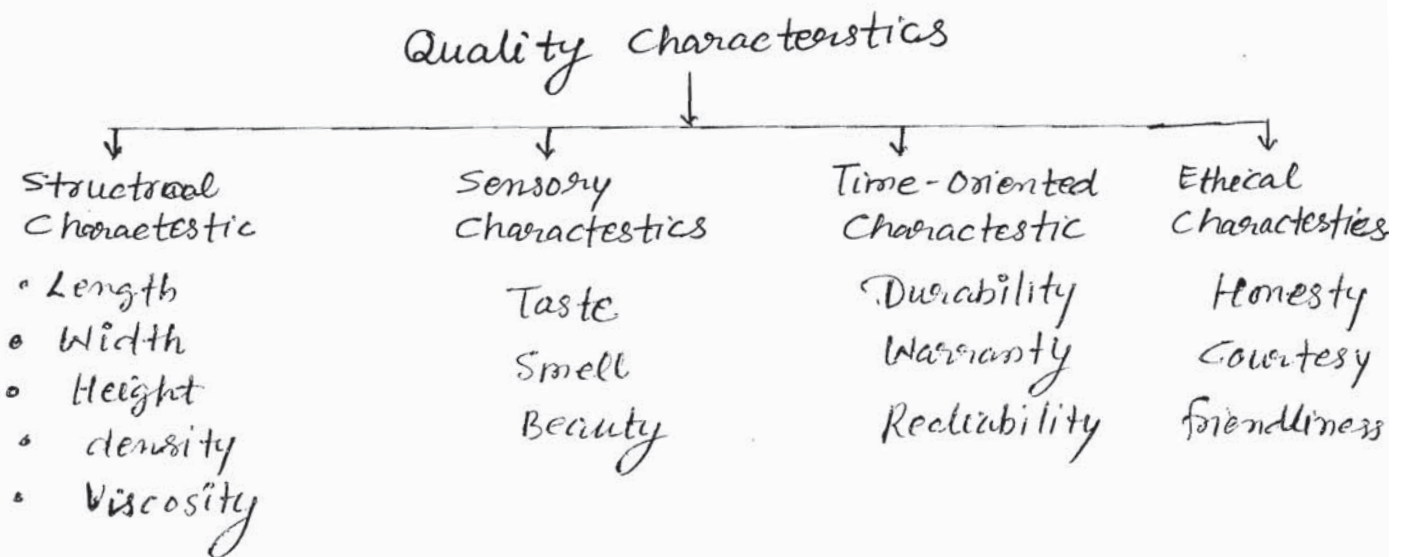
Sagar Sonkar Sir

Quality: → Quality can be defined as Degree of satisfaction of customer.

Dimension of Quality / Attributes used to define quality: →

- | | |
|-------------------|-------------------------------|
| (i) Reliability | (v) Serviceability |
| (ii) Durability | (vi) Aesthetic (look, colour) |
| (iii) Performance | (vii) Special feature |
| (iv) Conformance | (viii) Perceived Quality |

Quality Characteristics: → One or more elements defined the intended quality level of product or services, these element is known as quality characteristics.



QC & QA: →

Quality Control

A part of Quality management focus on fullfilling the quality requirement.

Quality Assurance

Apart of Quality management focus on providing confidence that quality requirement will be fullfill.

Note: → Quality Control divided into three main Area.

- 1- Offline quality Control
- 2- Statistical process Control
- 3- Acceptance Sampling Plan

Aspect of Quality: →

- These aspect of quality.
- (i) Quality of Design
 - (ii) " " Conformance
 - (iii) " " performance

Quality of Design

It means the intension of the designer to include or exclude the features in product or services.

Ex - BMW / Ford.

Quality of Conformance:

It means, how well the product or services meet the specification determined by designer.

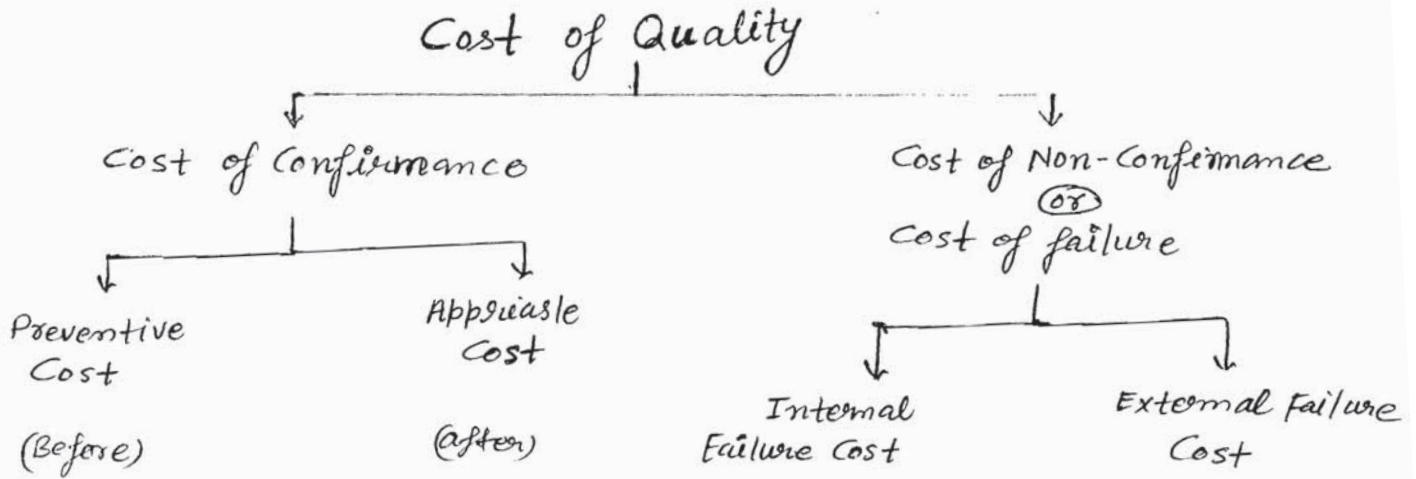
Ex → Bolt → 2 ± 0.003
[Dimension की बात करेगा] -

Quality of performance :- It's associated with the reliability of the product or services performing its intended function under the prescribed set of condition.

Ex → Voltage Stabilizer.
(180V to 240 Vt)

Cost of Quality →

It's used to measure the impact of quality in any business.



Cost of Conformance : → It's the cost of providing the product or services as per the required standard.

Preventive Cost : → It's the cost of ~~providing the product~~ related to attempt made to prevent the failure.

Ex - Cost of providing training to employee
Process simplification cost
process improvement cost

Appraisal Cost → It's the cost for activity to assure that no defect are found.

Inspection cost

Auditing cost

~~Cost of corrective action~~ . Checking cost

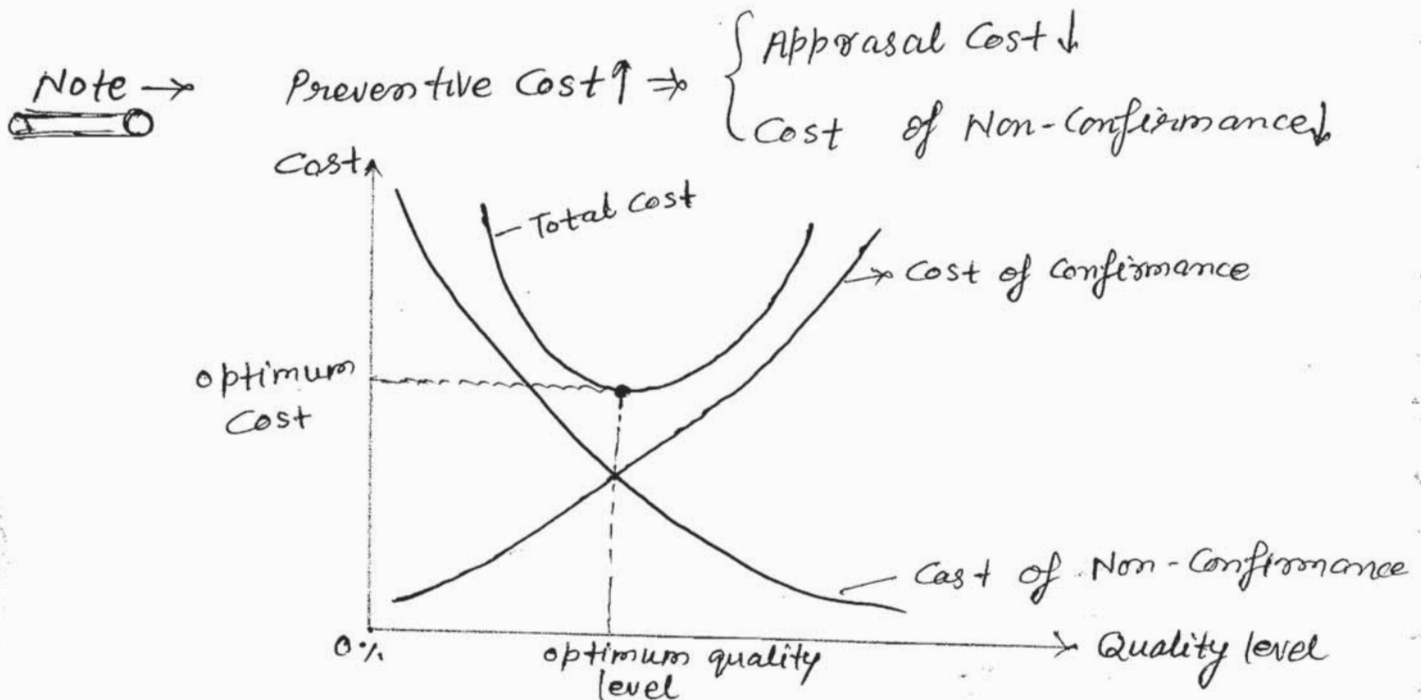
Cost of Non-Conformance :->

Internal Failure Cost :-> It arises when the result of work is failed to meet the desired std. and are detected before transfer to the customer.

- Ex - Cost of changes
- Cost of Rework
- Cost of corrective action.

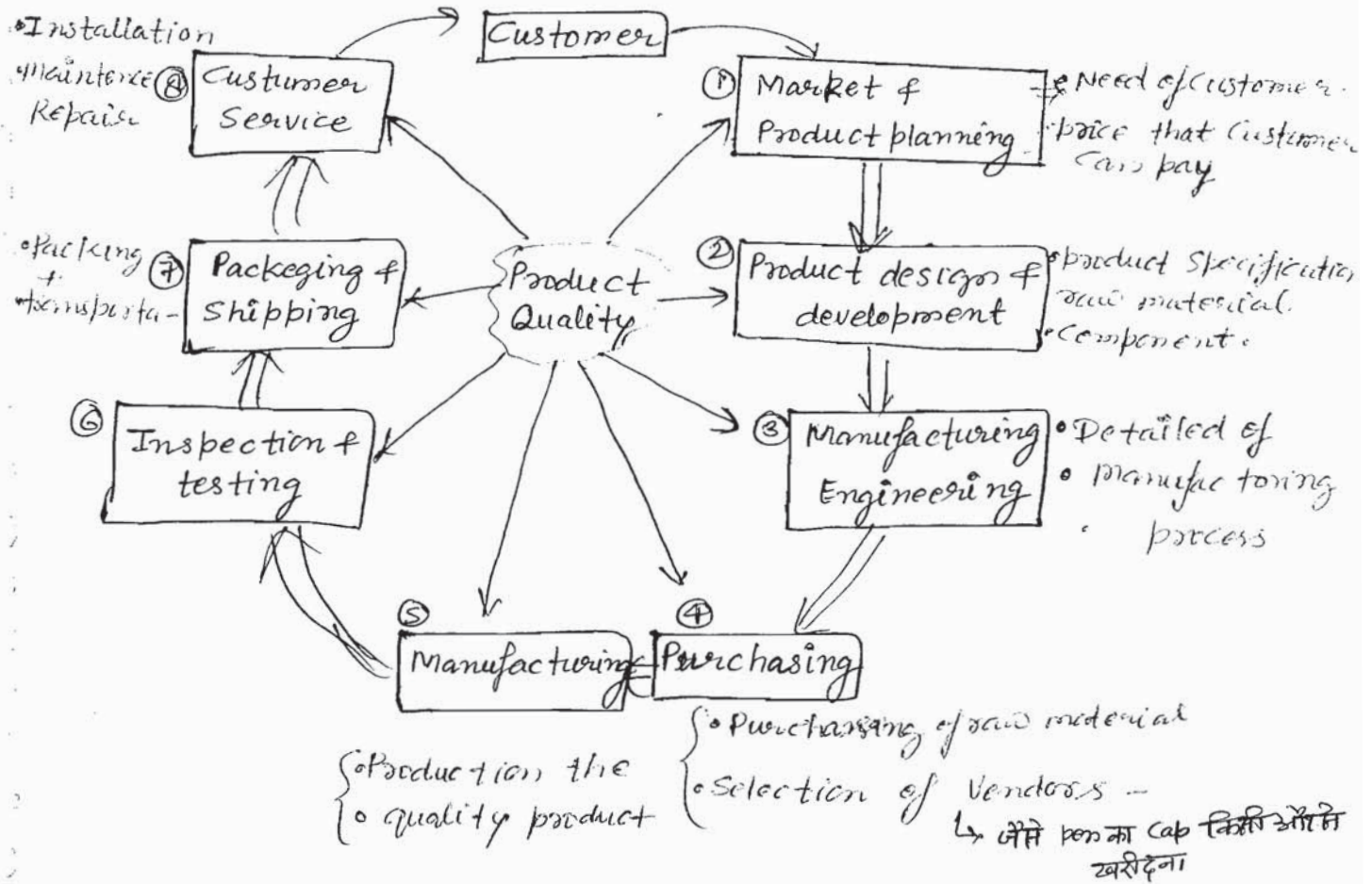
External Failure Cost :-> It arises when the product is being delivered to the customer.

- > Warranty Cost
- > Cost of Investigation of Customer Complaints
- > Product Liability Cost.



Total Cost -> Cost of Conformance + Cost of Non-Conformance

Department Responsible for ensuring quality of the product / service : →



DEMING : →

Quality Management Guru

Dr. William Edward Deming -
(N.S.O.)

{ Father of quality control.
 father of "Japanese post war industrial revival".
 Quality award = Deming prize.
 (Highest quality award of Japan)

Contribution —

- (i) Deming Cycle
- (ii) Deming system of profound knowledge
- (iii) Seven Deadly Disease.
- (iv) 14 point of quality management.

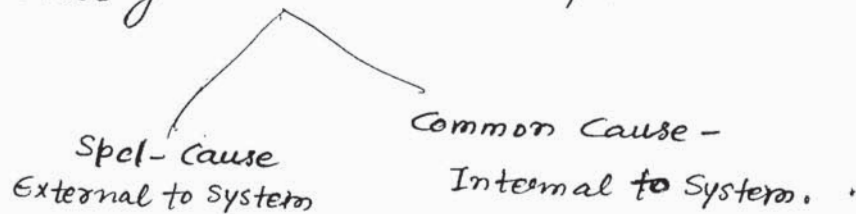
Deming System of Profound Knowledge : →

① Knowledge of system & theory of optimization : →

The objective of management need to understand that optimization of total system is the objective, not only the optimization of individual subsystem.

② Knowledge of theory of Variation : →

Causes of Variation in any process.



③ Exposure to the theory of knowledge —

④ Knowledge of Psychology

Deming's Deadly disease : →

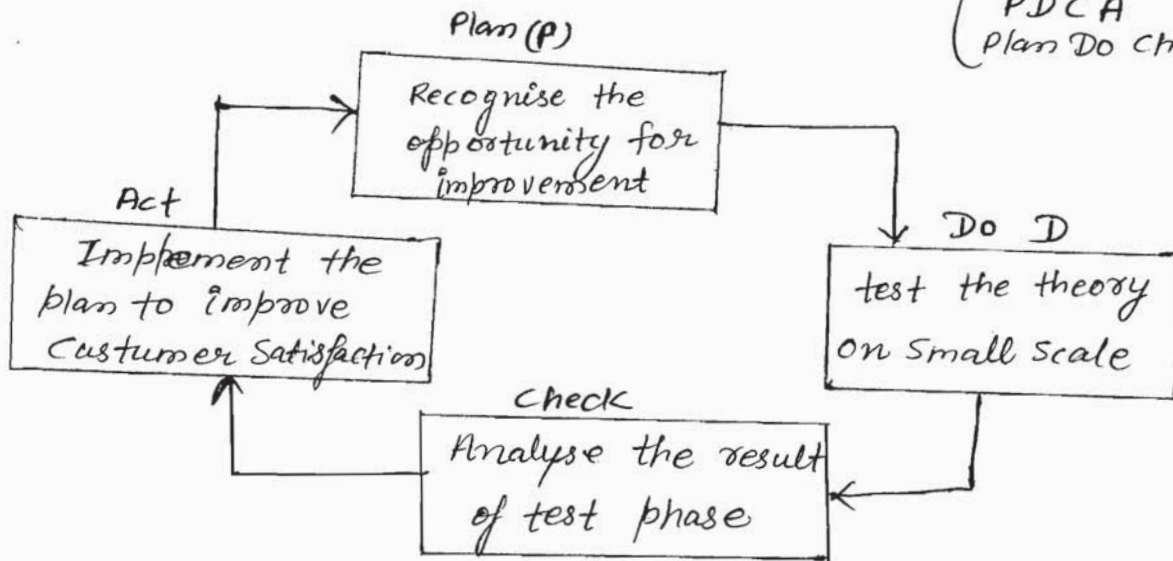
- Looking for short term-profit. ①
- Mobility of management. ②
- lack of Constancy^{faith} of purpose. ③
- performance appraisal by number ④
- Management by visible figure only ⑤
- { Excess warranty cost. ⑥
- { Excess medical cost. ⑦

③ Deming 14 points of quality management.

④ Deming Cycle \Rightarrow Continuous process improvement cycle

Given by Walter Shewhart, later adopted by Deming & it's named as Deming Cycle.

PDCA
Plan Do Check Act.
PDSA
Plan Do Study Act.



Product Improvement Cycle \Rightarrow

