

2. What is statistical quality control ? What are its advantages?

Ans

□ Statistical Quality Control (SQC) refers to the use of data & statistical analysis in order to identify the reasons for the variations in quality in industrial processes such as manufacturing.

The technique of SQC allows use to ensure that there is a degree of uniformity in the manufactured goods & that ~~the~~ the minimum industrial standards for quality are attained.

□ Advantages are as follows —

- (i) It helps in the control, maintenance & improvement of the quality standards.
- (ii) Trying to identify assignable causes of variation can help us find out the sources of many production errors. It can also help to improve the production process by reducing the source of errors.
- (iii) Since it is a ~~symmetric~~ systematic method, no need to constantly keep making the changes. There are fixed criteria to tell when to take remedial action to ~~correct~~ correct the production process.

3. What are the basic principles underlying Zero defects Technique ?

Ans :- The basic principles of Zero defects ~~Technique~~ Technique is as follows :

- (i) Quality is a state of assurance to requirements. Therefore zero defects in a project mean fulfilling requirements at that point in time.
- (ii) Right the first time. Quality should be integrated into the process from the beginning, rather than solving problems at a later stage.
- (iii) Quality is measured in financial terms. One needs to judge waste, production, & revenue in terms of budgetary impact.
- (iv) Performance should be judged by the accepted standards, as close to perfection as possible.

4. What do you understand by time study & work measurement?

Ans

□ Time Study :- Time study is work measurement technique for recording the times & rates of working for the elements of a specified job carried out under specified conditions. The following steps are followed to make time study -

- (i) Select
- (ii) Obtain & Record
- (iii) Define
- (iv) Measure
- (v) Extend
- (vi) Determined
- (vii) Compute

□ Work Measurement :- The application of techniques designed to establish the time for a qualified worker to carry out a specified job at a defined level of performance.

The objectives can be considered as

- (i) Comparing alternative methods
- (ii) Planning & control
- (iii) Realist costing
- (iv) Training new employees
- (v) Delivery date of planning
- (vi) Cost reduction & cost control

5. A job has been sub-divided into 4 elements. The time for each element & their respective rating are given below :

Element No.	Observed Time	Rating Factor %
1	0.6	100
2	1.0	80
3	1.2	130
4	1.5	90

Calculate the normal time & standard time for each element & for the job if the allowance is 5%.

Solution

For element 1

$$\begin{aligned}\text{Normal time} &= \text{observed time} \times \text{rating factor} \\ &= (0.6 \times 100 / 100) \text{ min} = 0.6 \text{ min}\end{aligned}$$

$$\begin{aligned}\text{Standard time} &= \text{Normal time} \times \left(\frac{100}{100 - \text{allowance in \%}} \right) \\ &= \left(0.6 \times \frac{100}{100 - 5} \right) \text{ min} = \cancel{0.706 \text{ min}} 0.632 \text{ min}\end{aligned}$$

For element 2

$$\text{Normal time} = 1.0 \times \frac{80}{100} = 0.8 \text{ min}$$

$$\text{Standard time} = \left(0.8 \times \frac{100}{95} \right) = \cancel{0.941 \text{ min}} 0.842 \text{ min}$$

For element 3

$$\text{Normal time} = \left(1.2 \times \frac{130}{100} \right) = 1.56 \text{ min}$$

$$\text{Standard time} = \left(1.56 \times \frac{100}{95} \right) = \cancel{1.835 \text{ min}} 1.642 \text{ min}$$

For element 4

$$\text{Normal time} = \left(1.5 \times \frac{90}{100} \right) = 1.35 \text{ min}$$

$$\text{Standard time} = \left(1.35 \times \frac{100}{95} \right) = \cancel{1.588 \text{ min}} 1.421 \text{ min}$$

6. What is Sales promotion ? What are its main objectives ?

Ans

□ Sales promotion is generally defined as those marketing activities that provides extra values or incentives to the sales force, the distributors, or the ultimate ~~use~~ consumer & can stimulate immediate sales. ~~In other words~~ According to A. H. R. Delen, sales promotion means, "any steps that are taken for the purpose of obtaining or increasing sales. Often, this term refers especially to selling efforts that are designed to supplement personal selling & advertising & by coordination, help them to become more effective. In other words, sales promotion refers to those specialized activities other than personal selling & advertising that are taken by a firm of promoting sales.

□ Its main objectives are as follows :

- (I) Bridge between advertising & personal selling
- (II) Introduction of new products
- (III) Attracting new customers
- (IV) Inducing present customers to buy
- (V) Increasing sales during off season
- (VI) Improving the public image of the firm.
- (VII) Encouraging business buyers.

7. What is Market Segmentation ? Explain its objectives & its importance.

Ans

□ Market Segmentation is a process that consists of sectioning the target market into smaller groups that share similar characteristics, such as age, income, personality traits, behaviour, interests, needs or location.

These segments can be used to optimize products, marketing, advertising & sales efforts.

□ It has different kind of objectives & importance. They are discussed below —

- Product : Creating successful products is one of the main objectives of organizations & one of the reasons why they conduct market research.
- Price : Another objective of market segmentation is to establish the right price for the products. Identifying which is the public that will be willing to pay for it.
- Promotion : It helps to target the members of each segment & select them in different categories so that you can direct your strategies appropriately.
- Place : The ultimate goal of segmentation is to decide how to offer a product to each group of consumers & make it pleasant to them.

8. Scott paper tests its toilet paper by subjecting 15 rolls to a wet stress test to see whether & how often the paper tears during the test. Following are the number of defectives found over the last 15 days: 2, 3, 1, 2, 2, 1, 3, 2, 2, 1, 2, 2, 1, 0, & 0. Construct a control chart for the process & comment on whether the process is "in control".

Solution

Days	:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Defective found	:	2	3	1	2	2	1	3	2	2	1	2	2	1	0	0

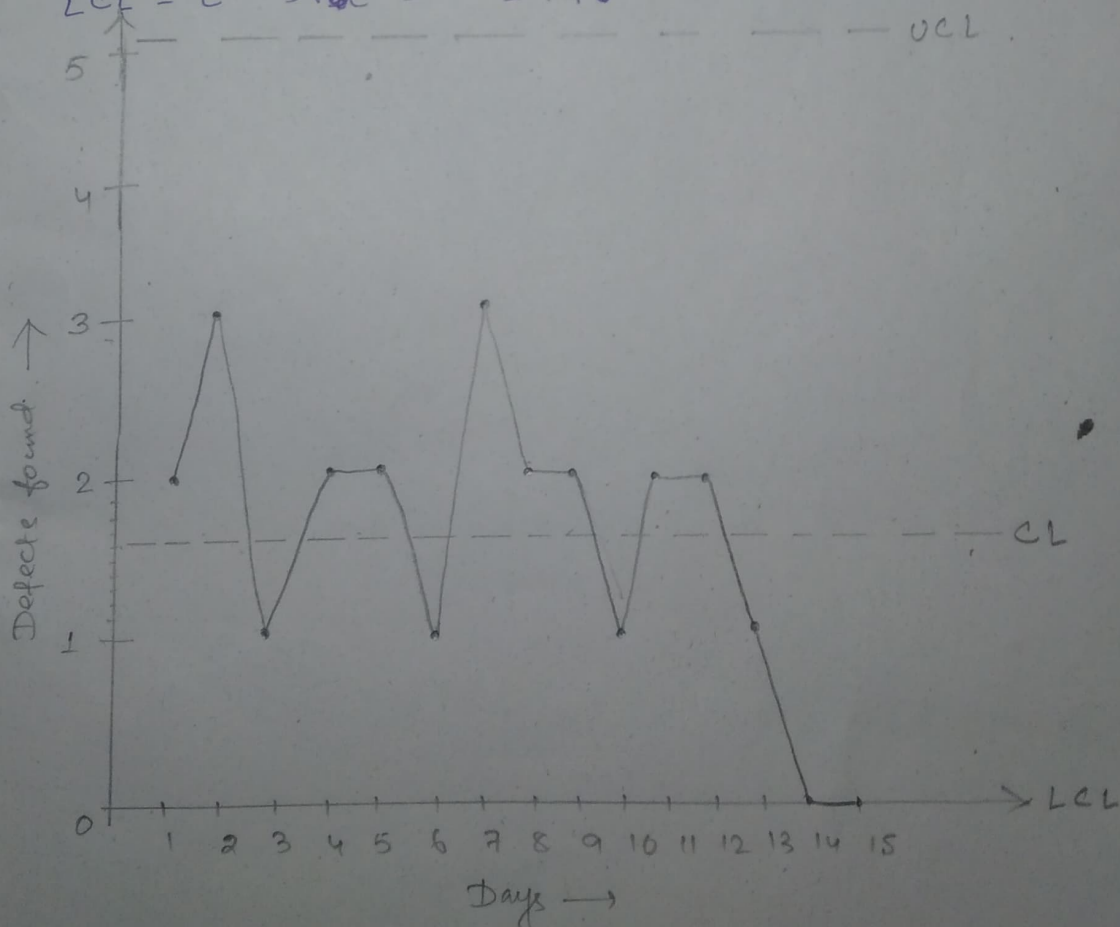
Total defective found = 24.

Total days = 15.

$$\text{Center line, } CL(\bar{c}) = \frac{24}{15} = 1.6$$

$$UCL = \bar{c} + 3\sqrt{\bar{c}} = 5.39$$

$$LCL = \bar{c} - 3\sqrt{\bar{c}} = -2.19 \approx 0$$



As none of the sample lines go out of UCL or LCL
 \therefore The process is "in control".