~~(1) Distinguish between inspection & quality.~~

~~Ans~~

(1) Discuss the various types of control charts used for (1) variables & (2) attributes

Ans There are two types of control charts —
(I) Control charts for variables
(II) Control charts for attributes

Control charts for variables are used to monitor characteristics that can be measured (length, weight, time etc). The two types of it are as follows —

- Mean (X-bar) Charts : Tracks the central tendency (the average value observed) over time.
- Range (R) Charts : Tracks the spread of the distribution over time (estimates the observed variation)

Control charts for attributes are used to monitor the characteristics that have discrete values & can be counted (% defective, no. of broken eggs in box etc). The two types are as follows —

- P-charts : Use for quality characteristics that are discrete & involve yes/no or good/bad desicions.
- C-charts : Use for discrete defects when there can be more than one defect per unit.

(2) Describe Six Sigma.

Ans Six Sigma aims at improving processes & producing goods with zero defects. There are two methods to achive this goal. They are as follows :

(I) DMAIC :- The various aspects of DMAIC are define measure, analyse, implement, control.

- Define : A numerical parameter must be used to define the problem. There must be an objective way to measure the problem & the goal is not to mange the problem but to solve it.
- Measure : Again, a numerical measurement of the current process is necessary in order to change the process.
- Analyse : Once the measurement are avilable, it is necessary to analyse the data to ~~the~~ eliminate the gap between the current practice & the desired goal.
- Implement : After analysis, changes need to be implemented to achive this goal.
- Control : Once changes have been made to the process to achive new operating limits then the black belt must oversee measures to keep these operating limits in place & then on to the next project in order to achive the Six Sigma goal.

(II) DMADV :- The various aspects of it includes define, measure, analyse, design & verify.

- ~~de~~ Define : It involves the defination of internal & external goals of the ~~co~~ customers & the project.
- Measure : Quantification of the customer needs as well as the goals of management.
- Analyse : It involves the analysis of the options as well as the exsisting process to determine the cause of error origination & evaluate corrective measureses.
- Design : It involves design of a new ~~process~~ process to the existing one to eleminate the error origination.
- Verify : This involves verification, by simulation or the performance of developed design to meet the target needs.

3. The observed time for an element is 1.2 minutes. The pace rating for the element is 120% & job difficulty is found to be 30%. Find Normal time of the element. Also find standard Time when an allowance of 10%

Solution

Given

Secondary adjustment = 1 + job difficulty

Observed time = 1.2 min
pace rating = 120%
job difficulty = 30%

∴ ~~Normal time~~ = ~~(Observed time x performance rating)/100~~

Base Time = pace rating x observed time

$= \frac{120}{100} \times 1.2 = 1.44$ min

(i) Normal Time = Base Time x Secondary Adjustment

$= 1.44 \times \frac{130}{100} = 1.872$ min

(ii) Allowance = 10%.

Standard Time = N ⊗ A

$= \left(1.872 \times \frac{100+10}{100-10}\right)$ min

$= \left(1.872 \times \frac{110}{90}\right)$ min

~~= 3.094 min~~ = 2.288 min.

5. Discuss the scope & objectives of work study.

Ans Objectives of Work Study:

- To analyze the present method of doing a job, systematically in order to develop a new & better method.
- To improve operational efficiency.
- To reduce waste through standardization of work elements of a job.
- To improve labor efficiency.
- To measure the work content of a job by measuring the time required to do the job for a qualified worker & hence to establish standard time.
- To increase the productivity.

6. Write short note on Acceptance Sampling.

Ans

ACCEPTANCE SAMPLING :-

Acceptance Sampling involves sampling inspection by a purchaser who has to decide whether to accept a shipment of product. Thus the objective of acceptance sampling, either to accept or to reject the product. It does not attempt to control the quality during the manufacturing process. A major advantage of acceptance sampling is that it can motivate suppliers to improve the quality of their items.

The various kinds of sampling plans used by purchasers to accept or reject a lot a discussed as under:

- Single-sampling plan : When the decision on whether to accept or reject a plot is based on only one sample, the acceptance plan is said to be a single-sampling plan.

- Double-Sampling plan : It is obviously more complicated than single-sampling plan. In this case, a lot is immediately accepted or rejected depending on the condition of the first sample.

8. Describe various means for promoting products & services.

Ans For promoting products & services, a set of marketing tools are used, which can be classified into four broad groups, known as the four Ps of Marketing. They are as follows:

(1) Product: This strategy involves deciding what goods & services the firm should offer to a group of consumers & also making decisions about customer service, brand name, packaging, labelling, PLCs, & new product development.

(2) Price :- The Pricing strategy deals with the methods of setting profitable & justifiable prices. ~~Marketers develops place strategy~~

(3) Place :- This strategy involves decisions related to the distribution functions & marketing intermediaries (channel members).

(4) Promotion :- In the Promotional strategy, marketers blend together the various elements of promotion to communicate most effectively with their target market.