

Ans-1) Reliability : Reliability is a characteristic which to the ability of a product to perform its intended function when required to do so

⇒ If equipment works satisfactorily whenever it is operated, we say that it is a reliable equipment

⇒ The reliability of a system or device is the probability that it will give satisfactory performance for a specified period of time under specified conditions -

Reliability can be calculated

$$R(t) = \frac{N-n}{N}$$

where N = Number of articles
 n = Number of failed articles

* Evaluate of Reliability

- ① Complexity of a product :-
- ② Simple ~~cost~~ product are ~~cheaper~~ much more reliable than complex ones
- ③ As the ~~more~~ number of components increases the reliability of the

System decreases in geometric progression -

② Component reliability \Rightarrow It is said that the strength of a chain is actually the length of its weakest link -

Even one small component of poor quality getting into the assembly can have a disproportionate adverse effect on the overall reliability to the equipment

③ manufacturing process -
Reliability of a product is determined by its design, the extent to which it is actually achieved depends upon the process of manufacturing ~~a product~~

Environmental Conditions \Rightarrow Therefore these factors have to be given due consideration during the design of a product to ensure that it can withstand environment hazards and achieve the required standard of reliability.

④ operation and maintenance \Rightarrow The way by which machine is operated and maintained also affect the reliability that will be achieved in actual service -