

DESIGN OF EXPERIMENT

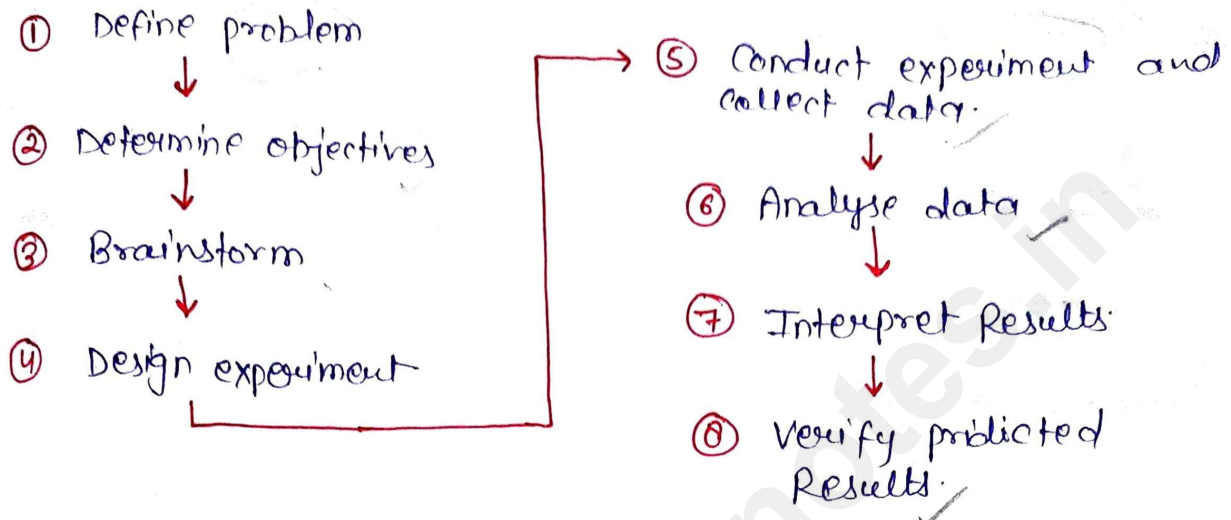
- Experiment is defined as the systematic method carried out under controlled conditions to know the unknown effect.
- It is also used to test or establish a hypothesis or to show a known effect.
- Design of Experiment or DOE or Experimental design all refer to collecting information related to an experiment.
- Experimental design is helpful to reduce design costs by speeding up the design process, reducing engineering design changes, and reduce product materials and labour complexity.
- These can also be used to reduce manufacturing costs by minimizing process and reducing networks, and requirement of inspection.

Purpose of Experimentation

① Designed experiments can be used to improve processes as well as products and their purpose included :-

- ① Comparing Alternatives ✓
 - ② Identify inputs that affect outputs ✓
 - ③ Achieving an optimal process output.
 - ④ Reducing variability.
 - ⑤ Minimizing, maximizing, and targeting a response.
 - ⑥ Improving the process or product robustness.
 - ⑦ Balancing trade-off. ✓
- being strong and healthy.

Experiment Design process



ONLINE STATISTICAL SOFTWARE'S TO INDUSTRIAL AND CLINICAL TRIAL APPROACH.

- ① Stata - It is a software provides data management Capability, data Analysis and a Colourful graphical interface.
- ② R - R is an open source statistical software tool that can be used to handle, visualize, and analyse different aspects of machine learning and is strictly a programming "command line interface (CLI)" software tool.
- ③ Graph Pad Prism - It is popularly used by biologists in academic and industry. Its functionalities allow researchers to perform laboratory research and clinical trial test using the t-test, one-way ANOVA, contingency

table, survival analysis and probability models such as logistic regression model.

- ④ SAS - SAS is the advanced analytics with functionalities that cut across diverse array of scientific and engineering enterprises and companies.
- ⑤ IBM SPSS - This software suitable for statistics researchers especially data elements such as data measurements, data types identification, variable assignment, and coding and case selection.
- ⑥ MATLAB - MATLAB is most popular in areas of engineering, numerical analysis, linear algebra, and image processing.
- ⑦ JMP - JMP includes the statistics with dynamic graphics, in memory and on the desktop. Its visual paradigm features enables JMP to reveal insights that are not possible to gain from raw tables of numbers or static graphs.