



SNS COLLEGE OF TECHNOLOGY

(An Autonomous Institution)



COIMBATORE-35

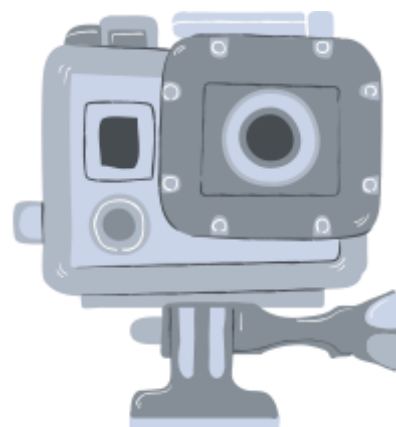
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UNIT 1

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGINEERING

Introduction to Power Quality

19EEE307 – Power Quality Engineering
IV year / VII Semester



07.09.2022

19EET307 / PQE / S.Bharath / AP -EEE

01/10



INTRODUCTION

POWER QUALITY

❖ Power quality refers to maintaining a sinusoidal waveform of bus voltages at rated voltage and frequency.

❖ The waveform of electric power at generation stage is purely sinusoidal and free from any distortion.



Modern Utility System

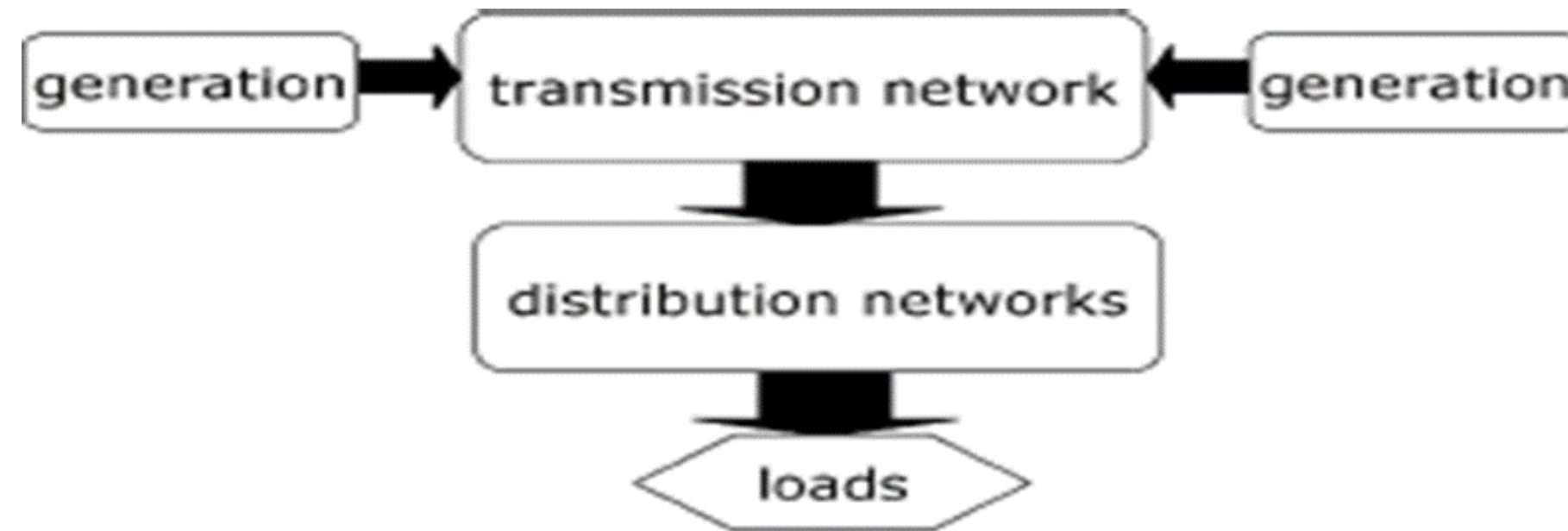


Fig. 1. Classical model of the power system.

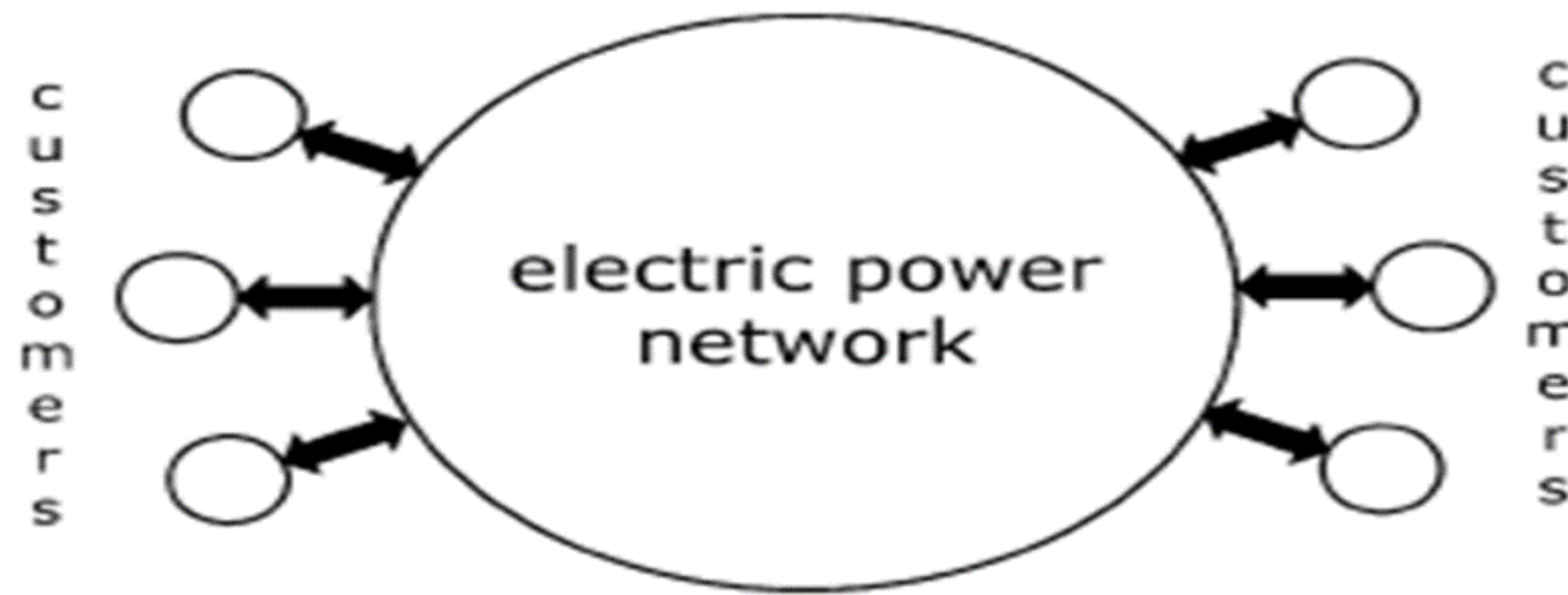


Fig. 2. Modern model of the power system.



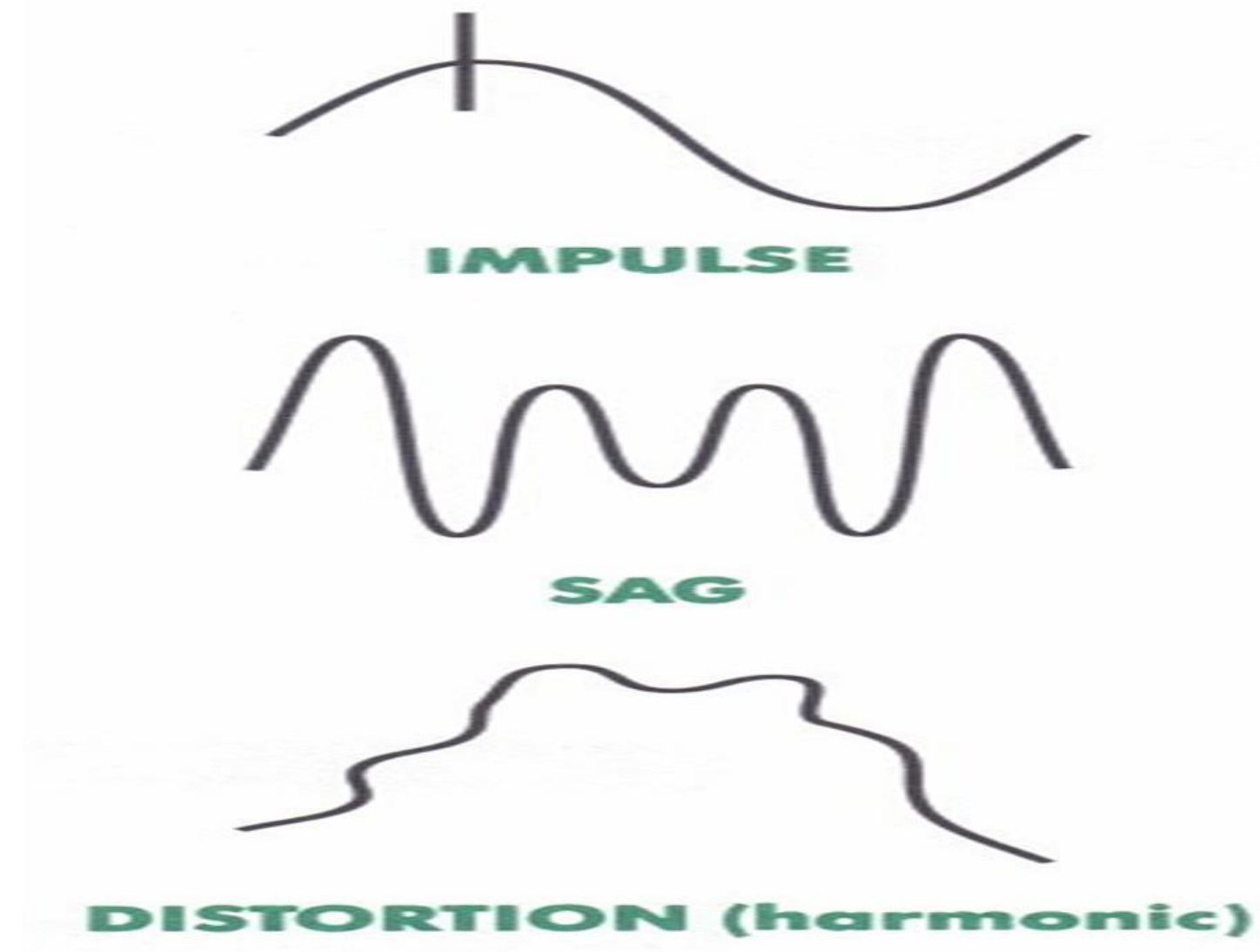
Modern Utility System



1. Deregulation of electricity market
2. Customer demand
3. Distributed generations
 - Wind Energy
 - Solar Energy
 - Co-generation plants



PQ Problems





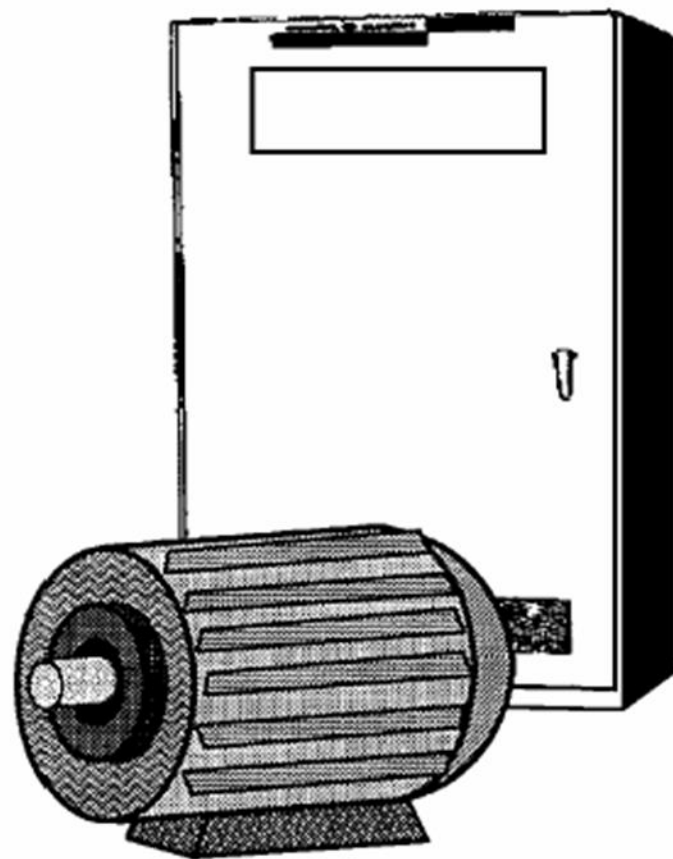
Resistive elements	Inductive elements	Capacitive elements
<ul style="list-style-type: none">• Incandescent lighting• Electric heaters	<ul style="list-style-type: none">• Induction motors• Current limiting reactors• Induction generators (wind mills)• Damping reactors used to attenuate harmonics• Tuning reactors in harmonic filters	<ul style="list-style-type: none">• Power factor correction capacitor banks• Underground cables• Insulated cables• Capacitors used in harmonic filters

Other linear loads, such as electrical motors driving fans, water pumps, oil pumps, cranes, elevators, etc., not supplied through power conversion devices like variable frequency drives or any other form or rectification/inversion of current will incorporate magnetic core losses that depend on iron and copper physical

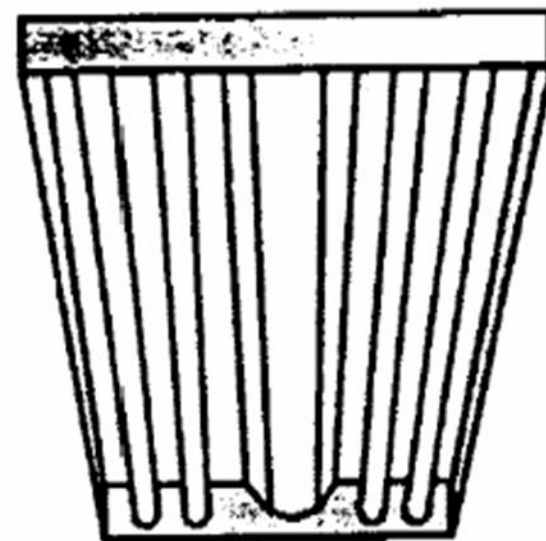


Non Linear Loads

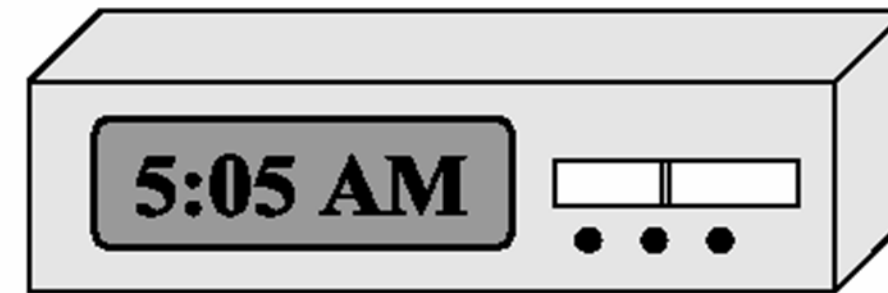
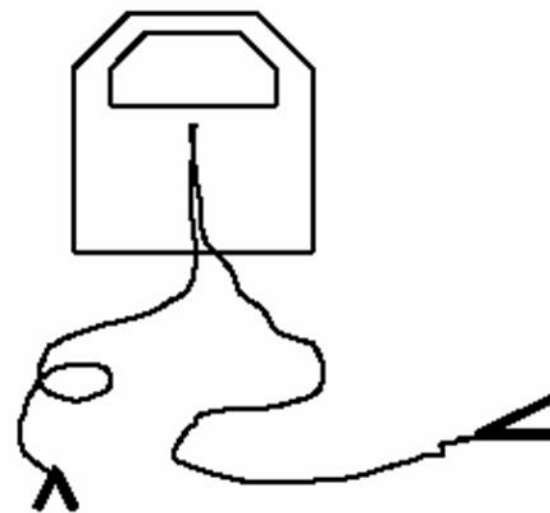
(a) Adjustable speed drive



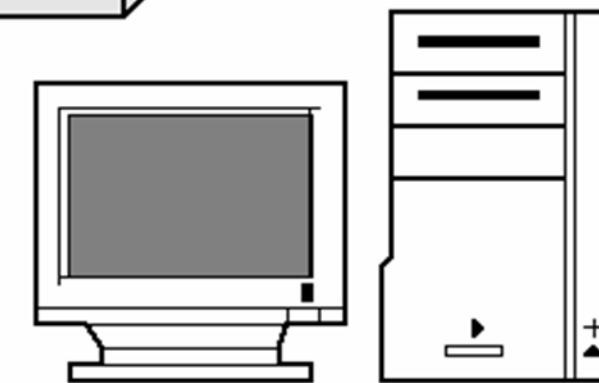
(b) Electronic ballasts lighting



(c) Arc welder



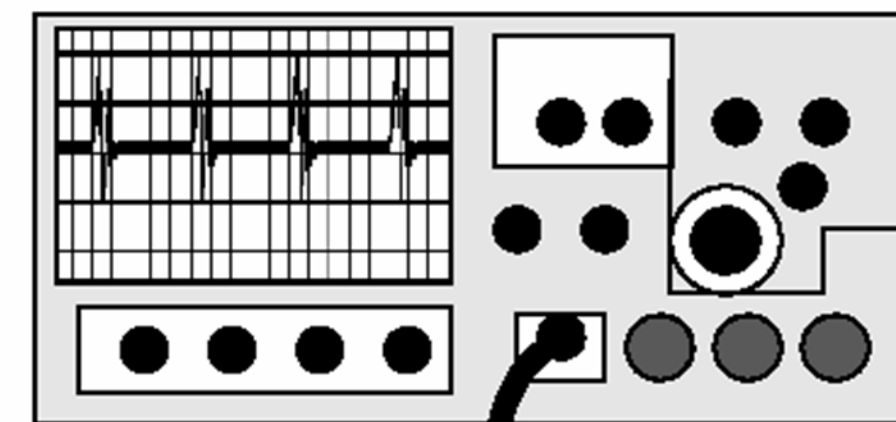
Digital clock



Personal computer



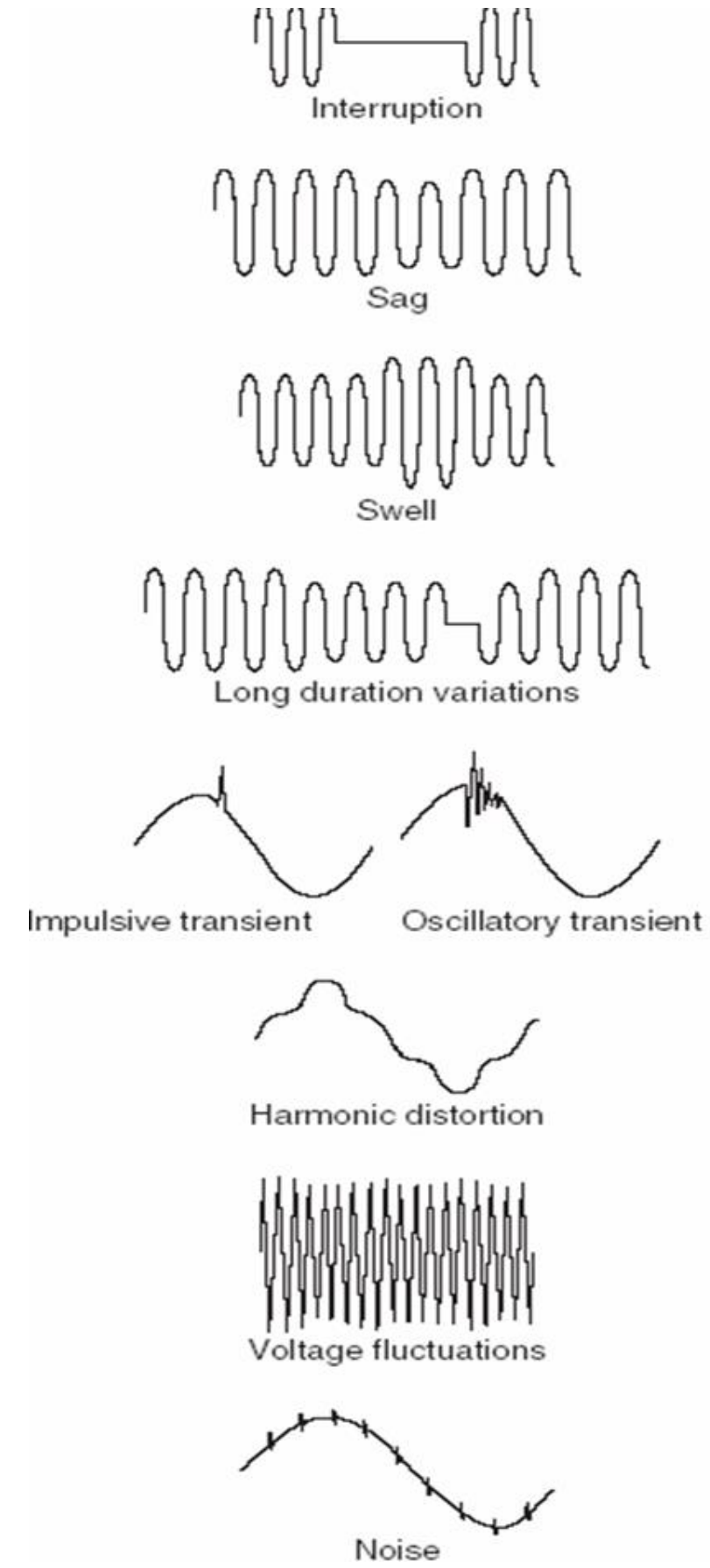
Cell phone.



Heart monitor



PQ Disturbances





Summary





KEEP
LEARNING..
Thank u

SEE YOU IN NEXT CLASS