



SNS COLLEGE OF ENGINEERING

Kurumbapalayam (Po), Coimbatore – 641 107

An Autonomous Institution

Accredited by NBA – AICTE and Accredited by NAAC – UGC with 'A' Grade
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

COURSE NAME : 19EE01 BASIC ELECTRICAL AND ELECTRONICS ENGINEERING

I YEAR /I SEMESTER MECHANICAL ENGINEERING

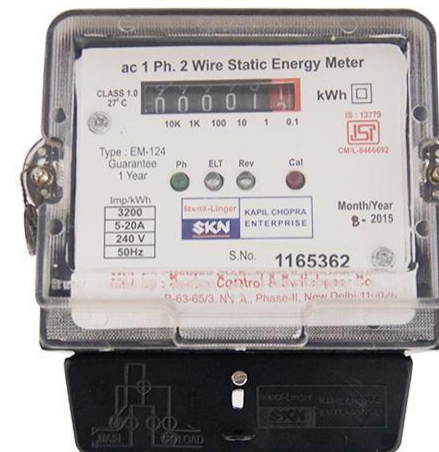
Unit 1 – Electrical Circuits and Measurements

Introduction to Measuring Instruments



MEASURING INSTRUMENTS

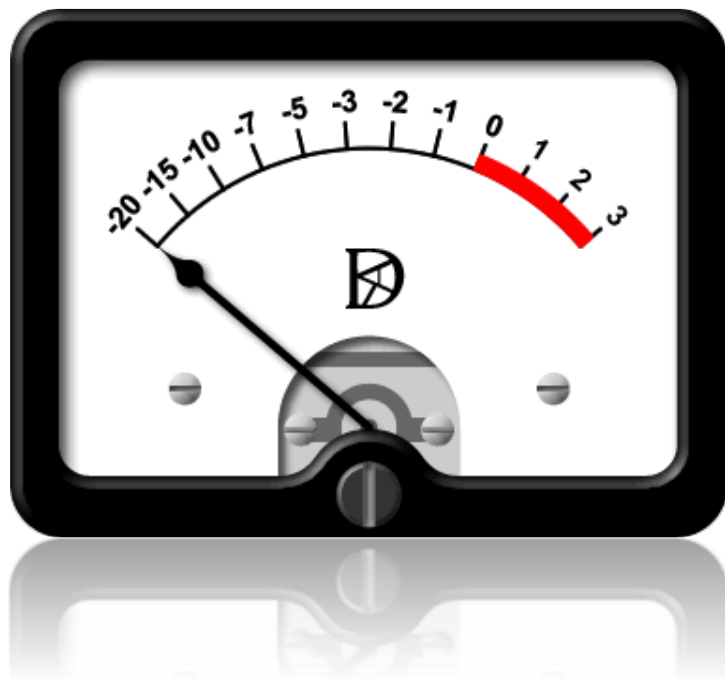
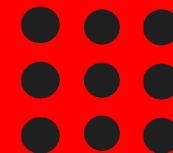
Why do we need measuring instruments in Electrical and Electronics Engineering?



The instruments used for all electrical measurements are called measuring instruments. They include ammeters, voltmeters, wattmeters, energy meters etc.



BASIC PRINCIPLE



OMG!! How it works?

How is the pointer moving?

How do instruments operating to measure electrical and electronic quantities ?





DEFLECTING TORQUE

- Have you ever played with a magnet ?



- Electrostatic effect is used mainly for the deflecting torque makes the pointer moves from zero position to the final position.

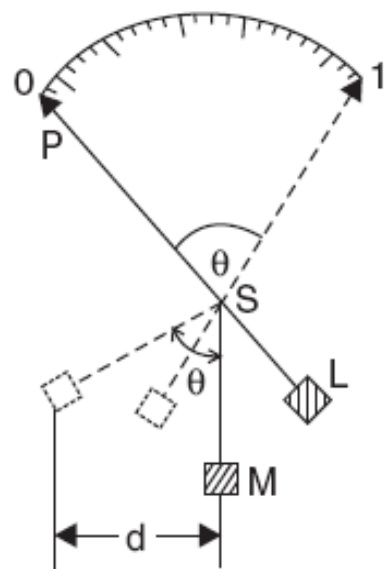


CONTROLLING TORQUE



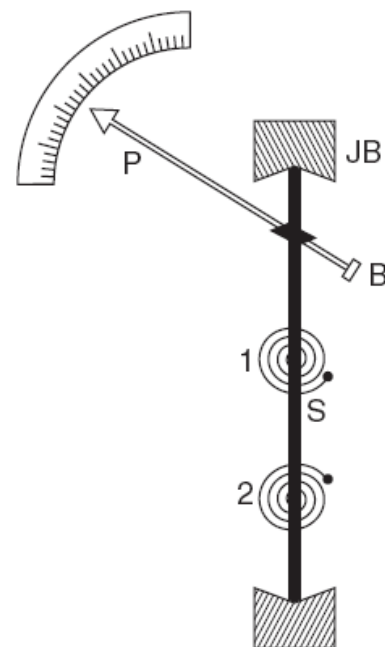
Controlling torque are used to keep the pointer of the instrument in one position and return back if its OFF

Gravity Control



P = Pointer
S = Spindle
L = Balance weight
M = Control weight
e = Angle of deflection

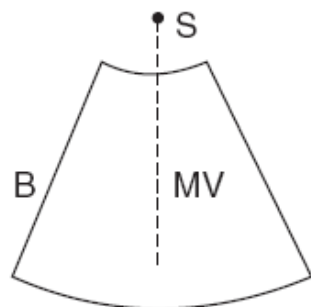
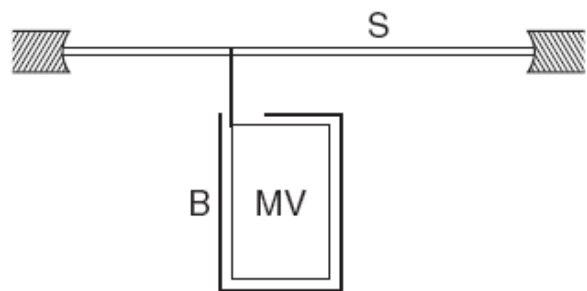
Spring control



P = Pointer
B = Balance weight
S = Spindle
JB = Jewelled bearing
1,2 = Springs

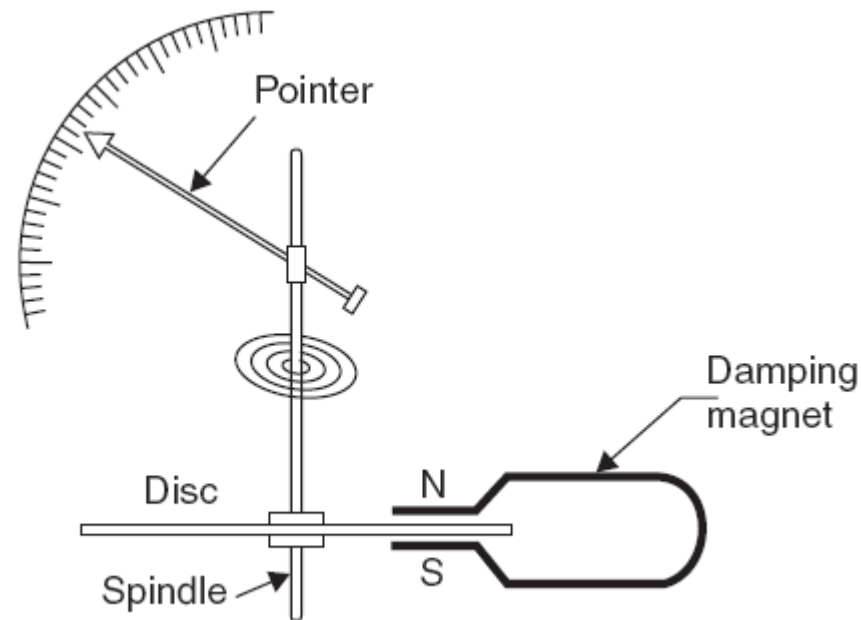
DAMPING TORQUE

It is used to reduced the oscillations of pointer and also to reach the rest position of the pointer



S = Spindle
B = Box (sector - shaped)
MV = Metal vane

Air Damping



Eddy current damping



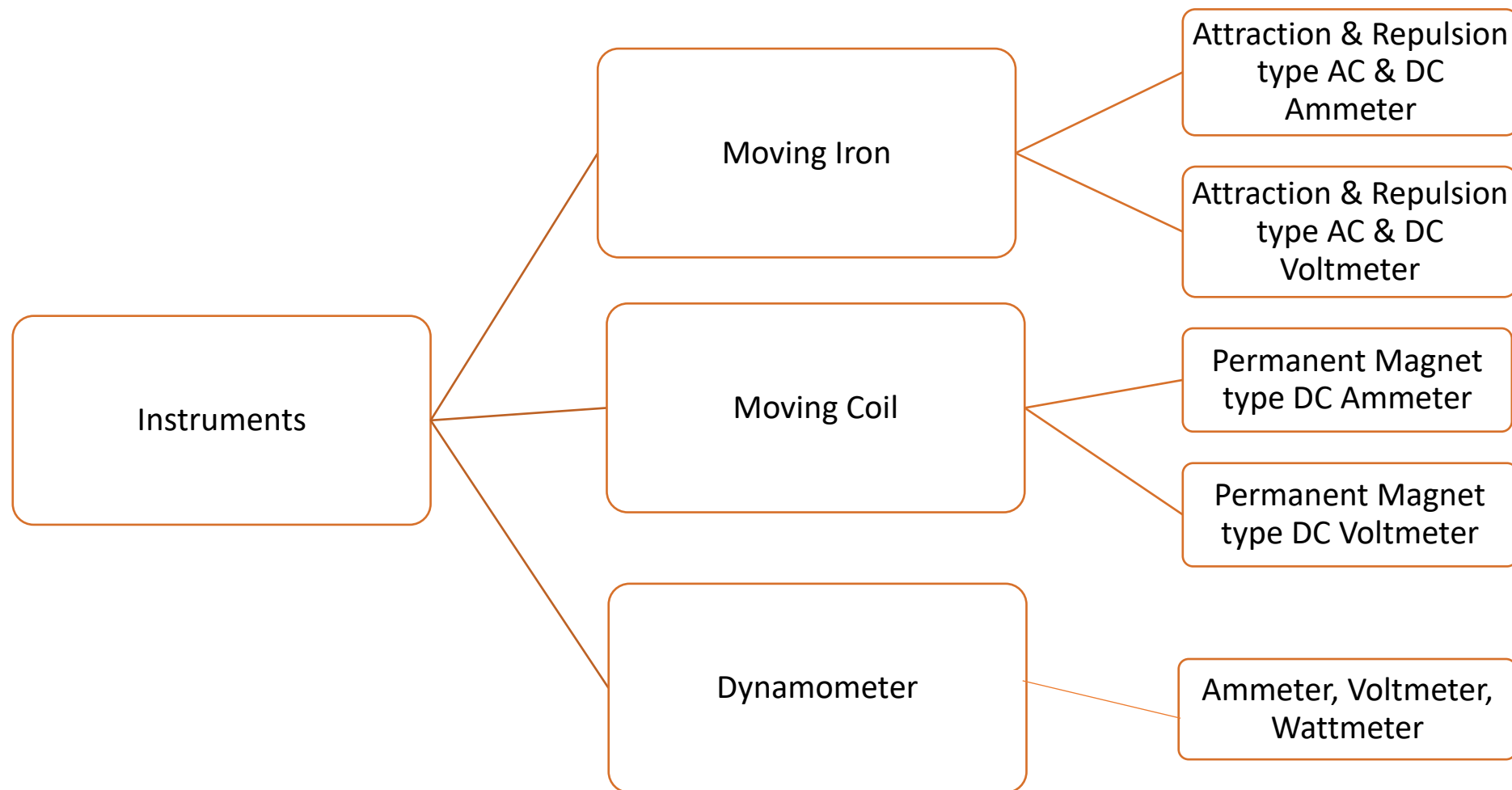
ASSESSMENT 1

1. _____ is used mainly for the deflecting torque makes the pointer moves from zero position to the final position.
2. Damping is used to reduce the _____ of pointer and also to reach the rest position of the pointer





TYPES OF INSTRUMENT





IQ

Guess the Instrument name !!





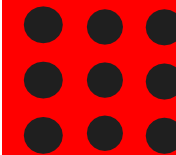
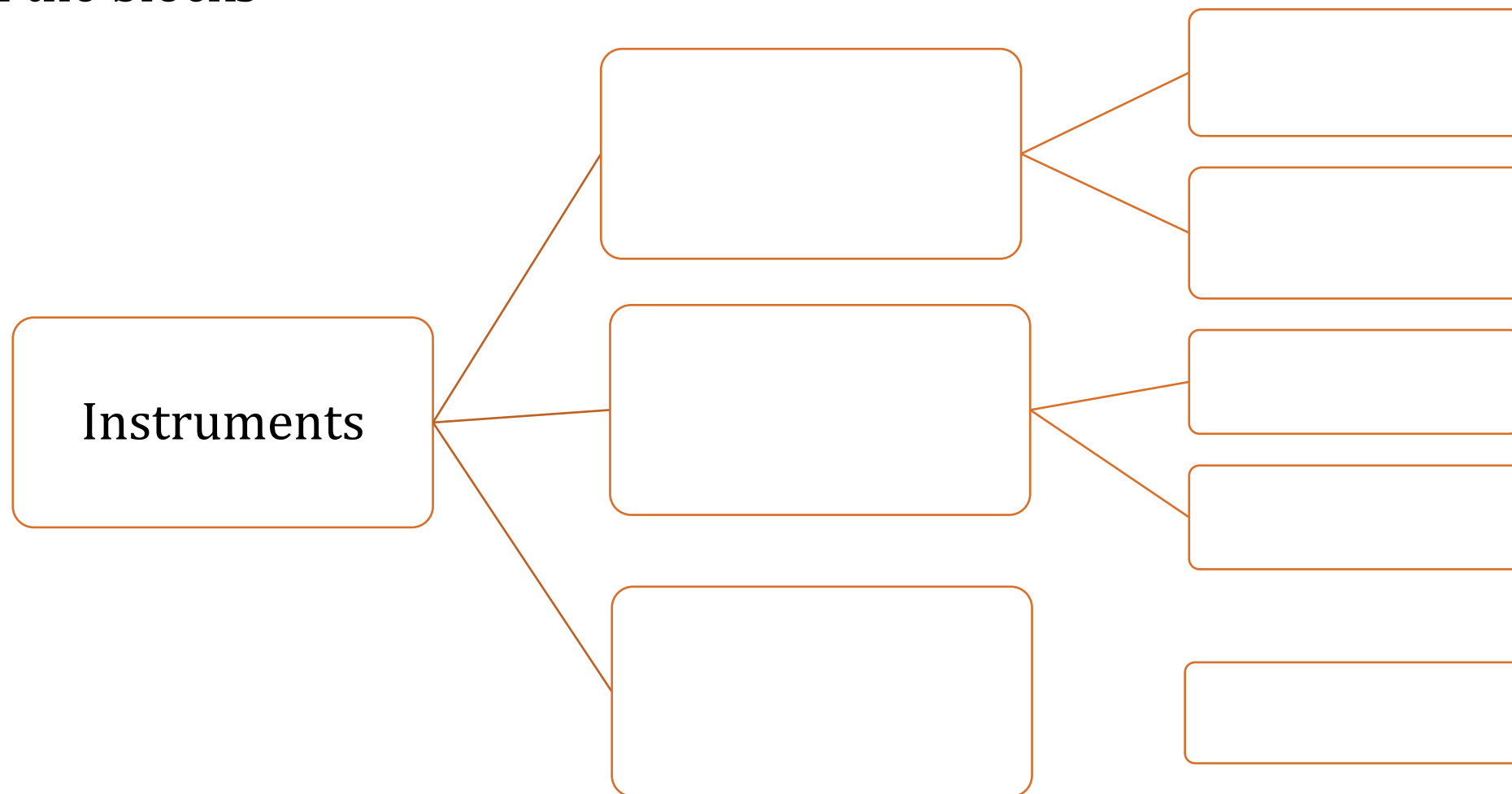
APPLICATIONS

- Electric Motor Industries
- Electric Lift Industries
- Electric Fan Industries
- Television Industries
- Educational Institutions
- TNEB



Assessment 2

- Fill the blocks





REFERENCES

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THANK YOU