SNS COLLEGE OF TECHNOLOGY

Coimbatore-35
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 ELECTRONICS & COMMUNICATION ENGINEERING

19ECT201 –ELECTRICAL ENGINEERING & INSTRUMENTATION

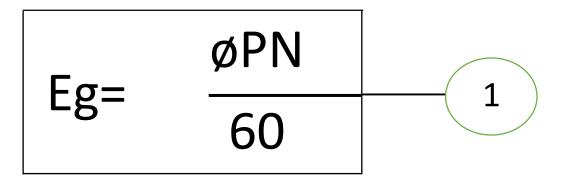II YEAR/ III SEMESTER

UNIT 3 – INDUCTION MACHINES

TOPIC 6 – EMF EQUATION OF ALTERNATOR

EMF INDUCED BY THE GENERATOR:

$$Eg = \frac{\text{ø}PN}{60} \qquad \text{(1)}$$

SPEED N(rpm):

$$N = \frac{120f}{P} \qquad \text{(2)}$$

SUB 2 in 1:

$$Eg = \frac{\text{ø}\cancel{P}\overset{2}{\cancel{120}}f}{\cancel{60}\cancel{P}} \qquad \text{(3)}$$

$$Eg = 2\text{ø}f \text{ volts} \qquad \text{(4)}$$

If there are **Z** conductors in series per phase:

$$Eg = 2\text{ø}fZ \text{ volts} \qquad \text{(5)}$$

Z = No. of Conductors or Coil sides in series/phase i.e. **Z = 2T**…Where T is the number of coils or turns per phase (Note that one turn or coil has two ends or sides)

$$Eg = 4\text{ø}fT \text{ volts} \qquad \text{(6)}$$

Also we know that;

Form Factor= RMS Value / Average Value

= RMS value= Form factor x Average Value,

= 1.11 x 4fΦT = 4.44fΦT Volts.

Thank You