9. Write short notes on : 20

(a) Induction type Wattmeter

(b) Restoring and Damping in measuring instruments.

Roll No. .....

24007

B. Tech 1st Semester (Common for All Branches) Examination – February, 2022

ELECTRICAL TECHNOLOGY

Paper : EE-101-F

Time : Three hours] *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt ***five*** questions in all. Question No. **1** is ***compulsory***. Attempt ***four*** more question from the sections A, B, C & D by selecting at least ***one*** question from each Section.

1. Attempt any *five* parts :

(a) State the ohm's law and give expression along with assumptions.

(b) Define Form Factor and Crest Factor for sinusoidal waveform with their values.

(c) Write down the line and phase relationship among currents in star connection.

(d) Write down the EMF equation of DC Motor, and mention various losses involved in it.

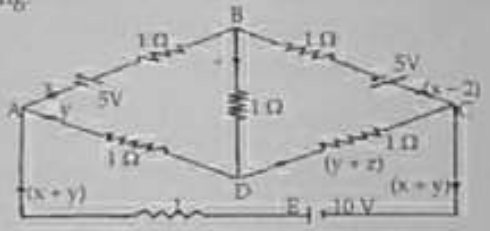
(e) Draw the phasor diagram at no load for an ideal transformer.

(f) Write down the advantages and disadvantages of permanent magnet moving coil instruments.

$5 \times 4 = 20$

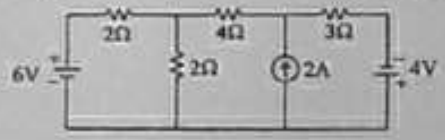
SECTION – A

2. State and explain Kirchoff's Law. Determine the current supplied by the battery in the circuit shown in the fig. 20



3. (a) State and Explain Milliman's Theorem. 20

(b) What is superposition theorem ? Find the value of voltage across the resistance in the given circuit.



SECTION – B

4. (a) Define and explain the terms mentioned below : 10

(i) Average value

(ii) Form Factor

(iii) Peak Factor

(b) An a.c. circuit consists of resistance 3 ohms, and inductance of 0.02H, connected to a 220V, 50Hz supply. Find the value of capacitor that can be placed in parallel with the inductive circuit to produce the resonance. Also find the current taken from the supply at the resonance. 10

5. Derive the mathematical equation for RMS and average values of a sinusoidal signal. 20

SECTION – C

6. Derive the relation between V_L and V_{Phase} in three phase star connected AC system and also derive the equation power in three phase star connected AC system. 20

7. Draw and explain the phasor diagram of single phase transformer at capacitative load. 20

SECTION – D

8. (a) Discuss and explain different type of losses present in DC Machines. 10

(b) Draw and explain the construction and working principle of DC generator. 10