

7. (a) Draw the vector diagram of a power transformer under full load condition. 10
- (b) What is transformer ? How does it transfer electric energy from one circuit to another ? 10

**SECTION – D**

8. (a) Give the materials and functions of the following parts of a DC machine : 14
- (i) Field poles
- (ii) yoke
- (iii) commutator
- (iv) commutating poles
- (v) Armature
- (b) Give advantages and uses of lap and wave windings. 6
9. (a) What are the advantages and disadvantages of moving iron instruments. 10
- (b) Discuss the construction working of a dynamometer wattmeter with the help of neat diagram. 10

Roll No. ....

**24007**

**B. Tech. 1st Semester  
Examination – December, 2015**

**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.*

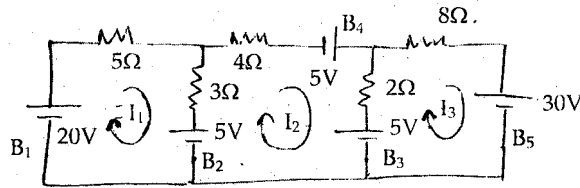
*Note : Question No. 1 is compulsory and attempt any one question from each of four Sections.*

1. (a) Explain star to delta transformation.
- (b) Explain Air damping and eddy current damping.
- (c) Derive emf equation for transformer.
- (d) Define cycle, frequency, time period and junction.
- (e) Discuss comparison of star and delta connection. 20

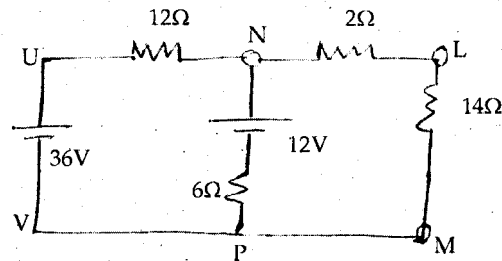
**SECTION – A**

2. (a) State and explain Kirchoff's laws by suitable example. 10

- (b) Determine the current supplied by each battery in the circuit shown in figure : 10



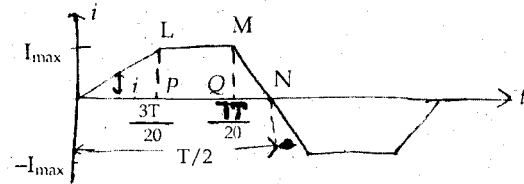
3. (a) Using Thevenin's theorem, calculate the potential difference across terminal L and M : 10



- (b) State and explain superposition theorem by suitable example. 10

### SECTION - B

4. Find the RMS and average value of the trapezoidal current waveform shown in figure : 20



24007-23,950-(P-4)(Q-9)(15) (2)

5. (a) Define resonance for series circuit, also sketch resonant ckt, phasor diagram and resonance characteristics. 10

- (b) A circuit consisting of a coil having an inductance of 0.25 H and a Resistance of 3 ohm is arranged in series with a capacitor of Capacitance 20 micro farad. Calculate at what frequency Resonance will take place and current flow if an alternating voltage of 40 volt at the resonant frequency is applied to the circuit. Find also the voltage across the capacitor. 10

### SECTION - C

6. (a) Why is the number of phases in a polyphase system always three rather than any other number ? 8

- (b) Two wattmeters connected to read the total power in a 3 phase system supplying a balance load read 10.5 kW and -2.5 kW respectively. Calculate the total power and power factor. Also explain the significance of (1) equal wattmeter readings and (2) a zero reading on one wattmeter. 12

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P. T. O.