**Printed pages: 2** **Sub Code: NEE201**

**Paper Id: 120240** **Roll No.** | | | | | | | | | | |

**B TECH**
**(SEM II) THEORY EXAMINATION 2018-19**
**BASIC ELECTRICAL ENGINEERING**

**Time: 3 Hours** **Total Marks: 100**

**Note: 1.** Attempt all Sections. If you require any missing data, choose suitably.

## SECTION A

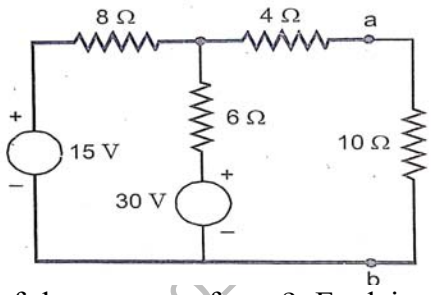
**1. Attempt all questions in brief.** **2 x 10 = 20**

a. What is the internal resistance of an ideal current source?
b. What are the applications of maximum power transfer theorem?
c. What do you mean by form factor and peak factor?
d. What is the average power in a pure inductive circuit?
e. Explain phase sequence in a three phase circuit.
f. Explain absolute instruments.
g. What is the necessity of earthing?
h. Explain the term magnetic leakage and fringing.
i. Explain the principle of Electromechanical energy conversion.
j. What is the function of brushes in dc machine?

## SECTION B

**2. Attempt any three of the following:** **10 x 3 = 30**

a. Using Superposition theorem find current in 10 ohm resistance in the circuit given below.



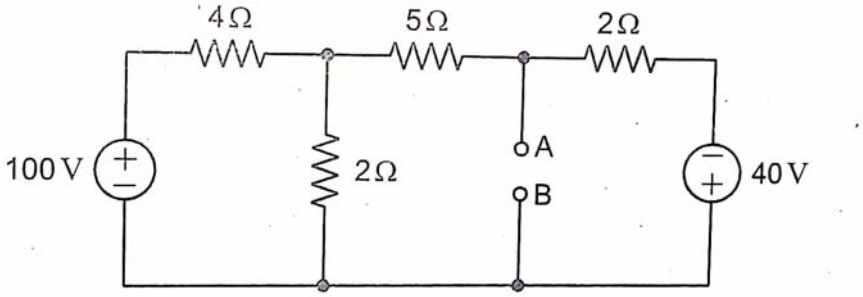

b. What are the causes of low power factor? Explain the methods for the improvement of power factor.
c. Derive the expression for finding power factor of three phase system using two wattmeter method.
d. Explain the principle of operation of a single phase transformer and losses in a transformer.
e. Explain the working of three phase induction motor and draw the torque slip characteristic of this motor.

## SECTION C

**3. Attempt any one part of the following: 10 x 1 = 10**

(a) Derive the condition of maximum efficiency and amount of maximum power transfer in Maximum power transfer theorem for dc network.

(b) Draw Thevenin's equivalent circuit across point AB of the given network.




**4. Attempt any one part of the following: 10 x 1 = 10**

(a) Derive the relation for resonance frequency in series RLC circuit and draw resonance curve for impedance and current.

(b) A 50 mH inductive coil has a resistance of 10 ohm. How much current will it draw , if connected across 100 V 50 Hz source? Also determine the value of capacitance that must be connected across the coil to make the power factor of the circuit unity.

**5. Attempt any one part of the following: 10 x 1 = 10**

(a) A 3 wire, three phase supply feed a load consisting of three equal resistors. by how much is the load reduced if one of the resistor be removed? (i) When the load is star connected (ii) When the load is delta connected.

(b) Explain construction and working of MI type instruments also gives its and disadvantages.

**6. Attempt any one part of the following: 10 x 1 = 10**

(a) What do mean by earthing? Explain any two methods of earthing.

(b) A 200 KVA transformer has an efficiency of 98% at full load. If the maximum efficiency occurs at three quarters of full load, calculate the efficiency at half load. Assume negligible magnetizing current and power factor of 0.8 at all loads.

**7. Attempt any one part of the following: 10 x 1 = 10**

(a) Explain the working of dc motor and draw the characteristics of dc motors.

(b) Why single phase induction motor is not self-starting? Explain different methods of starting of single phase induction motor.