Code No: R161209   **R16**   SET - 1

I B. Tech II Semester Supplementary Examinations, Nov/Dec - 2017
BASIC ELECTRICAL AND ELECTRONICS ENGINEERING
(Com. to ME, AE, AME, Min E, MET)

Time: 3 hours   Max. Marks: 70

Note: 1. Question Paper consists of two parts (**Part-A** and **Part-B)**
2. Answering the question in **Part-A** is Compulsory
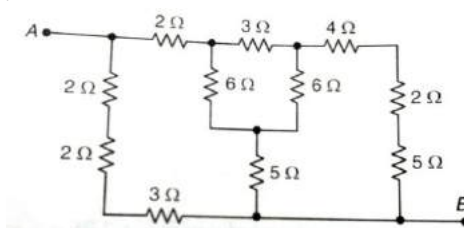3. Answer any **FOUR** Questions from **Part-B**
~~~~~~

PART –A

1. a) What are the limitations of Ohm's Law?   (2M)

    b) What is the need of starter in a DC Machine?   (2M)

    c) What are various losses in Transformer? How would they change with respect to   (2M)
        load variation?

    d) What is the difference between Synchronous motor and Asynchronous motor?   (2M)
        Explain.

    e) Explain the principle of operation of PN junction diode.   (2M)

    f) Explain the difference between PNP and NPN transistors.   (2M)

    g) An alternating voltage (80+j60) V is applied to a circuit and the current flowing is   (2M)
        (-4 + j10) A. Find the impedance of the circuit.

PART -B

2. a) Calculate the effective resistance between the points A and B in the circuit shown   (7M)
        in figure. Derive the formulae used.

    b) A series circuit consisting of a 25Ω resistor, 64mH inductor and an 80μF capacitor   (7M)
        is connected to a 110V, 50Hz single – phase supply. Calculate the current and
        voltage across each element.

3. a) Discuss the principle of operation of DC machine as a generator and motor   (7M)

    b) Draw the schematic diagram of dc shunt motor. Also write the back emf, current   (7M)
        and voltage equations.

Code No: R161209   **R16**   SET - 1

4. a) Obtain an expression for induced e.m.f. in a transformer. (7M)

    b) A single – phase 250 kVA transformer has an efficiency of 96 % on full –load at   (7M)
        0.8 power factor and on half full –load at 0.8 power factor. Find :

        (i)   Iron loss, and   (ii) full – load copper loss.

5. a) Explain the principal of operation of the 3-phase induction motor. (7M)

    b) Explain the slip-torque characteristics of induction motor. (7M)

6. a) Obtain the expression for efficiency of full wave rectifier with relevant waveforms   (7M)
        and circuit.

    b) Explain the characteristics of OP-AMP. (7M)

7. a) Discuss various types of Transistor connections. (7M)

    b) With a negative feedback, an amplifier gives an output of 10V with an input of   (7M)
        0.5V. When feedback is removed, it requires 0.25V input for the same output.
        Calculate i) Gain without feedback ii) feedback fraction m.