Basic Electronics Engineering-101

Sem-I

Pro-Ponement

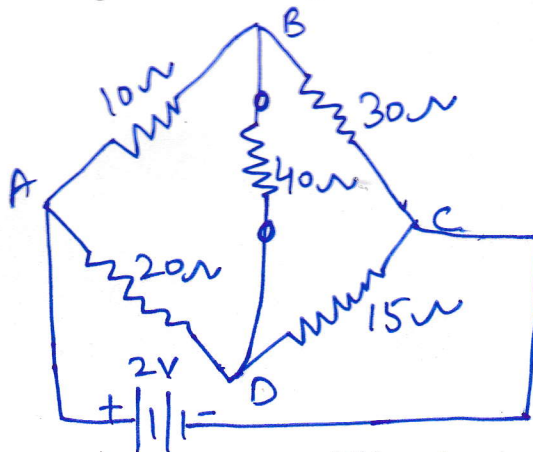Syll-Dec-2015

Time: 3hrs   M.M.-50

Note: Attempt any three questions from section A and any three questions from section B. All questions of Section C are compulsory

Section A

QI.   Calculate the current through 40Ω resistor connected across arm BD in Wheatstone bridge shown in figure below using Thevenin's Theorem.

QII. Explain the step voltage response of RL series circuit.

QIII. Prove that for maximum power transfer theorem, Load resistance(R_L) is equal to Thevenin Resistance(R_{th}).

QIV. Derive an expression for voltage, current and power relations in a balanced 3-Phase delta connected Load. Also draw it's Phasor diagram

QV.   A series RLC circuit with $R=100\Omega$ and $L=0.6H$ results in a leading Phase of 60 degree at a frequency of 40Hz. Find the resonance frequency of circuit.

(3x5)

Section B

QVI   Describe the ideal and Actual transformer ON-LOAD with phasor diagram.

QVII Discuss in detail the working principle and construction of DC Motor.

QVIII Explain the characteristic of DC shunt motor. Also explain it's application.

QIX   How Short circuit test is performed on the transformer? Draw it's set up and discuss the results obtained from the test.

QX   What is the efficiency of a transformer? Derive the condition for maximum efficiency.

(3x5)

Section C

QXI

a) State torque equation of DC Motor
b) State Norton's Theorem
c) What do you understand by Power factor of a circuit?
d) What is the role of commutator in DC Motor?
e) Why transformer can't work on DC voltage?
f) The synchronous speed of induction Motor is 1500rpm and rotor speed is 1400rpm. Find slip
g) Define Kirchoff's current law
h) Why are domestic appliances are connected in parallel?
i) Draw the Phasor diagram of purely inductive circuit for current and voltage
j) Write down the characteristic of ideal transformer

(2x10)