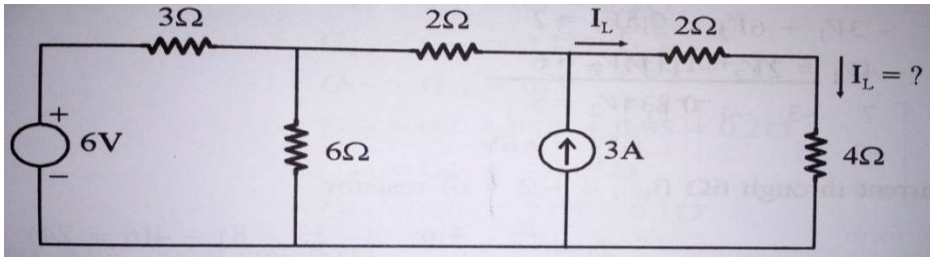
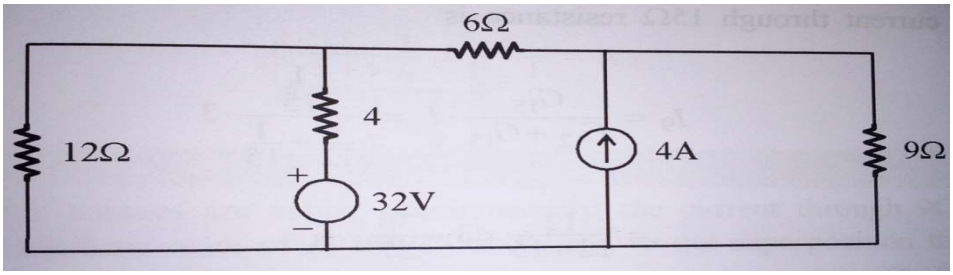
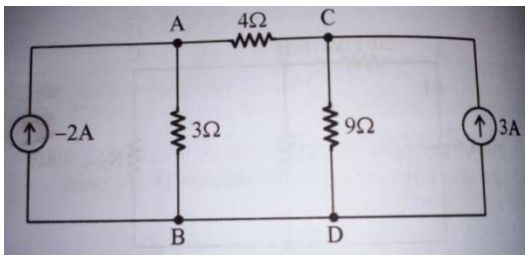
DEPARTMENT OF HUMANITIES & APPLIED SCIENCE

I YEAR I/II SEMESTER

1FY3-08/2FY3-08: BASIC ELECTRICAL ENGINEERING

Note: *Each Assignment of 10 marks*
All questions carry equal marks

ASSIGNMENT-I (D.C. Circuits)

Q.1 State and Explain Kirchhoff's law.	BLT-1	CO-1
Q.2 Write a Short note on (a) Linear and Nonlinear Elements (b) Active & Passive Elements	BLT-2	CO-1
Q.3 Determine the current i_L through a 4-ohm resistor using node analysis. 	BLT-3	CO-1
Q.4 Compute the power dissipated in a 9Ω resistor by applying the superposition theorem. 	BLT-3	CO-1
Q.5 Find current through 4Ω resistor using source transformation: 	BLT-1	CO-1

*BLT: BLT shows the **Bloom's taxonomy** levels

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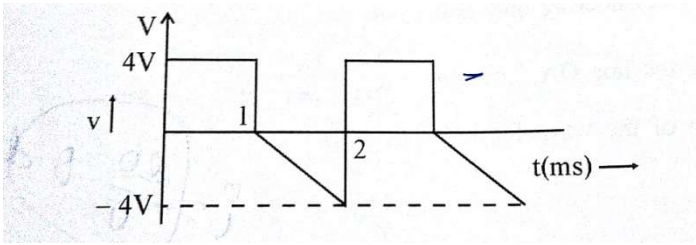
ASSIGNMENT-II

Q1. Define and determine the average value and RMS value of an alternating sinusoidal quantity.	BLT-1	CO-2
Q2. Find the average and RMS value of the waveform shown below: 	BLT-1	CO-2
Q3. A circuit consists of the following in parallel (a) A resister of 500 ohms (b) An inductor of 2H (c) A capacitance of 10μF. A source voltage of 200v, 50Hz is applied. Determine the current from the supply, complex power, active power, reactive power and power factor of the circuit.	BLT-1	CO-2
Q4. Draw the circuit diagram and phasor diagram of 3-phase star connected circuit, and explain the relationship between line voltage and phase voltage and Line current and Phase current.	BLT-3	CO-2
Q5. Derive the expression of Impedance and current for a series R-L-C circuit with the help of circuit diagram , also draw the phasor diagram under the following conditions: (a) $X_L > X_C$ (b) $X_C > X_L$	BLT-2	CO-2

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ASSIGNMENT-III

Q1. Give the reason why: (a) Rating of Transformer in KVA/ MVA? (b) Why single-phase motor are not self started while three phase motor are self started?	BLT-2	CO-3
Q2. Define Transformer, Derive the expression of E.M.F. Equation of transformer.	BLT-3	CO-3
Q3. Define the Voltage regulation and efficiency of a Transformer. Also explain the different type of losses found in transformers.	BLT-2	CO-3
Q4. Draw and explain the Torque - Slip characteristics of Induction motor, also explain various significance of Torque – slip characteristics of I.M.	BLT-1	CO-3
Q5. A single phase 3300/220, 50 Hz transformer has secondary full load current of 180 amp. It has 50 turns on its secondary. Calculate: a. Voltage per turn b. The number of primary turns c. The full load primary current d. The KVA output of the transformer.	BLT-3	CO-3

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ASSIGNMENT-IV

Q.1 Define SCR, Draw and explain the V-I Characteristics of SCR.	BLT-1	CO-4
Q. 2 Define IGBT, draw the structure and explain the working if IGBT.	BLT-2	CO-4
Q. 3 Explain the working of 1- phase full wave rectifier with the help of circuit diagram and waveform. Obtain the expression of average value and RMS value of output current and voltage.	BLT-2	CO-4
Q. 4 Define Inverter, draw the circuit diagram and explain the working of inverter circuit.	BLT-2	CO-4
Q. 5 Define chopper, draw the circuit diagram and explain the working of chopper circuit.	BLT-1	CO-4

ASSIGNMENT-V (Electrical Installation)

Q.1 Define the following terms: (a) SFU (B) MCB	BLT-1	CO-5
Q. 2 Explain the role of MCCB / ELCB in the electrical system installation.	BLT-1	CO-5
Q. 3 Draw the layout diagram of basic electrical installation, and explain any four important components used for electrical installations.	BLT-2	CO-5
Q. 4 What is Earthing? Explain various types of earthing and importance.	BLT-3	CO-5
Q. 5 Explain the two-wattmeter method to obtain the total power measured and power factor with proper circuit diagram and phase diagram.	BLT-6	CO-5

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