

Code No: D-2338/N/BL/AICTE

**FACULTY OF ENGINEERING**  
**B.E. (EEE/EIE/CSE/CME/DS) II – Semester (AICTE) (New) (Main & Backlog)**  
**Examination, September / October - 2022**

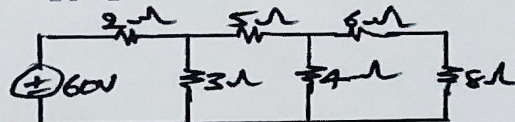
**Subject : Basic Electrical Engineering**

**Max. Marks: 70**

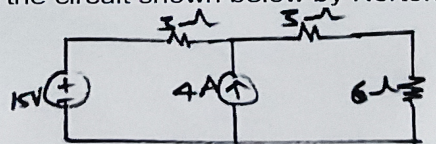
**Time : 3 Hours**

- Note:** (i) First question is compulsory. Answer any Four questions from the remaining six questions. Each question carries 14 marks.  
(ii) Answer to each question must be written at one place only and in the same order as they occur in the question paper.  
(iii) Missing data, if any, may be suitably assumed.

1. (a) State super position theorem and it's limitations.  
(b) Write the voltage and current equations for R, L, C elements.  
(c) Draw the impedance triangle of series R-L and R-C circuits.  
(d) Give the relationship between line and phase quantities in a 3-phase Delta Connection.  
(e) Write the relation between turns ratio, voltage ratio and current ratios in transformer.  
(f) What is the principle of operation of a D.C generator?  
(g) Define fuse.
2. (a) Determine the current flowing through the 4 ohm resistor in the below circuit by using Mesh Analysis.



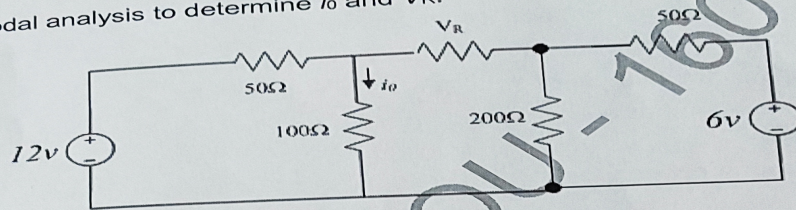
- (b) Write procedure for solving circuit using Norton's theorem and calculate current through 6 Ω resistor in the circuit shown below by Norton's equivalent.



3. (a) Derive the relationship between line and phase quantities in a 3-phase balanced star connection.  
(b) Explain the operation of a series RLC circuit, when excited by AC supply with neat diagram.



4. (a) Explain the constructional details of single phase transformer.  
(b) Explain working principle of 3-phase induction motor.
5. (a) Explain the construction features and principle of operation of single phase induction motor.  
(b) Derive the EMF equation of a DC generator.
6. (a) Explain the construction and working of MCB, ELCB and MCCB.  
(b) Discuss about, improvement of power factor and disadvantages of Power factor.
7. (a) Use nodal analysis to determine  $i_0$  and  $V_R$ .



- (b) The impedance of an electrical circuit is  $(30 - j50)$  ohms. Determine (i) the resistance, (ii) the capacitance, and (iii) the magnitude of the impedance, when the circuit is connected to a 240 V, 50 Hz supply.

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