



বাংলাদেশ আর্মি ইন্টারন্যাশনাল ইউনিভার্সিটি অব সায়েন্স এন্ড টেকনোলজি, কুমিল্লা সেনানিবাস
 BANGLADESH ARMY INTERNATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY (BAIUST), COMILLA CANTONMENT

Department of Electrical and Electronic Engineering

Mid Term Examination, Fall 2015 (Level-1, Term-II)

Course Code: EEE-103

Course Title: Electrical Circuits II

Notes:

Time: 1 hr

Full Marks: 60

- Answer any 03 (three) of the following 5 questions.
- Each question carries 20 marks.
- Figure on the right of each question indicate marks for respective question.

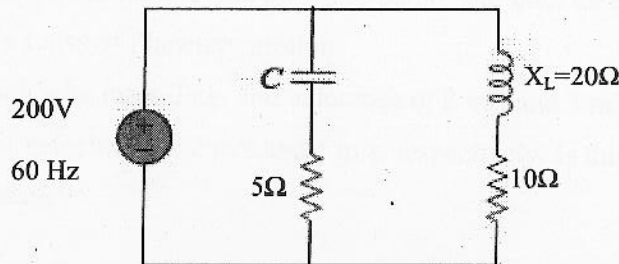
- (a) Assume that the current $i = I_m \sin \omega t$ flows through a given RL branch. Show that the voltage across the branch is, 15

$$v = I_m Z \sin(\omega t + \theta) = V_m \sin(\omega t + \theta)$$

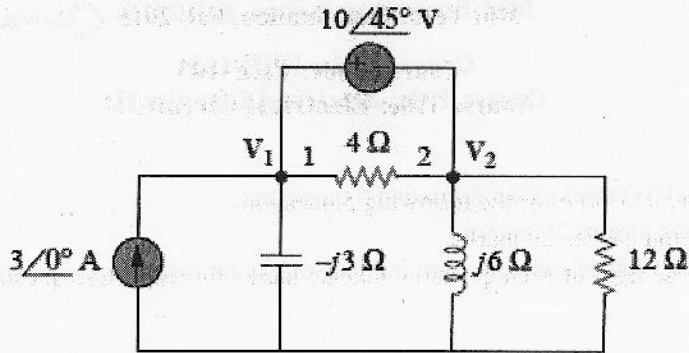
where, $Z = \frac{V_m}{I_m} = \sqrt{R^2 + (\omega L)^2}$ and $\theta = \tan^{-1} \frac{(\omega L)}{R}$

- Find the 60 cycle impedance of a pure capacitive branch with $C = 15 \mu\text{F}$. 05
- (a) What do you mean by Real Power and Reactive Power? 04
 - (b) An RLC series branch consists of $R = 12.9$ ohms, $L = 0.056$ H, and $C = 78 \mu\text{F}$. 16
 - What is the complex impedance of the RLC branch at 60 cycles?
 - If a 60 cycle current $I = 10 \angle 30^\circ$ A flows through the branch, find the voltage V across the terminals of the series RLC branch.
 - Draw a phasor diagram illustrating V & I .

- (a) Define the followings: 04
 - Effective or rms value
 - Power Factor
- (b) Find C to produce resonance in the circuit of the following figure. 16



4. (a) What do you mean by Resonance? Upon which condition resonance occurs in a series circuit containing R, L, and C. 05
- (b) Compute V_1 and V_2 in the circuit of the following figure. 15



5. (a) Determine the Thevenin equivalent V_{th} and Z_{th} of the circuit below as seen from the terminals a-b. 20

