



American International University- Bangladesh (AIUB)
Faculty of Engineering

Course Name:	Introduction to Electrical Circuits	Course Code:	COE 2101
Semester:	Fall 2021-22	Total Marks:	5
Faculty:	Prof. Dr. Mohammad Abdul Mannan	Term	Final

Assignment 01 [Final-TERM] [5 Marks]

Submission Date: November 11, 2021 [Thursday]

General Instruction:

1. Solve the problem to A4-size white paper by your handwritten.
2. Write your **Name, Student ID, Section, Page Number** and value of m_5 on the top of first page.
3. In top of other pages write the **Page Number**.
4. Take picture of your solution for each page individually.
5. **Insert the picture in a word file.**
6. Make word file into PDF format file.
7. Save PDF file using middle five digits of your ID number such as:
 $m_1m_2m_3m_4m_5_A01FIEC.pdf$
8. Submit it in VUES.
9. **For each day delay 1 marks will be reduced.**
10. **Picture format file submission will not be considered**

Problem 01:**[3 Marks]**

The supply voltage and the current of an electrical load are:

$$v(t) = 100\sin(314t + 70^\circ) \text{ V}$$

$$i(t) = 20\sin(314t + 100^\circ) \text{ A}$$

- (a) Calculate (i) the impedance, (ii) the admittance.
- (b) Find the value of (i) the resistance, (ii) the reactance, (iii) the conductance, and (iv) the susceptance.
- (c) Calculate (i) the power factor, (ii) the reactive factor, (iii) the power, (iv) the reactive power, (v) the apparent power.
- (d) Write the voltage and current in polar form.
- (e) Calculate the complex power.
- (d) Draw the power triangle.

Problem 02:**[2 Marks]**

- (a) If the supply voltage to the following loads is $v(t) = 50\sin(377t + 30^\circ) \text{ V}$ find the equation of $i(t)$.
 - (i) $R = 20 \text{ ohm}$
 - (ii) $L = 50 \text{ mH}$
 - (iii) $C = 200 \text{ }\mu\text{F}$
- (b) If the supply current to the following loads is $i(t) = 5\sin(200t + 50^\circ) \text{ A}$ find the equation of $v(t)$.
 - (i) $R = 10 \text{ ohm}$
 - (ii) $X_L = 20 \text{ ohm}$
 - (iii) $X_C = 15 \text{ ohm}$