



**UNIVERSITY OF MINES AND TECHNOLOGY, TARKWA**  
**FIRST SEMESTER EXAMINATIONS, MAY 2018**

**COURSE NO:** EL 276  
**COURSE NAME:** MATLAB-SIMULINK  
**CLASS:** EL II **TIME: 2:30 HOURS**

Name: \_\_\_\_\_ Index Number: \_\_\_\_\_

**SECTION A – PRACTICALS – COMPUTER LAB. (30 MARKS)**

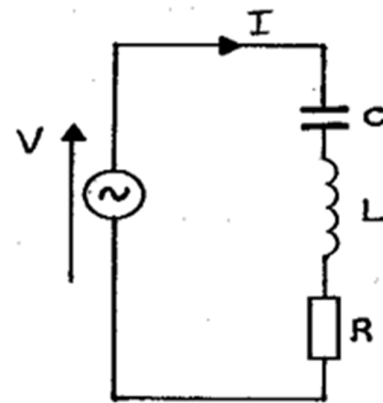
1. A 230 V, 50 Hz AC supply is applied to a coil of 0.06 H inductance and 2.5 Ω effective resistance connected in series with a 6.8 μF capacitor. Using Simulink in MATLAB, model the equations given to calculate the electrical power, *P* offered by an RLC circuit. 20 Marks

$P = VI\cos\phi$  but  $V = IZ$  where

$Z = [R^2 + (X_L - X_C)^2]^{1/2}$

Also,  $X_L = 2\pi fL$  and  $X_C = \frac{1}{2\pi fC}$

and  $\phi = \tan^{-1}\left(\frac{X_L - X_C}{R}\right)$



Simulate your design with varying frequencies (Ramp Signal), and shown the variations in  $X_L$ ;  $X_C$  and power, *P*.

2. Using **subplot**, complete the figure below that consists of 4 different graphs/plots arranged in the exact locations as shown below. 6 Marks

Area plot of a <b>3x3 magic matrix</b>	Plot of $\sin(100\pi t)$ where <i>t</i> ranges from $-\pi$ to $+\pi$ at intervals of 0.02.
Any <b>Bar</b> chart of the <b>3x3 magic matrix</b>	A combined <b>stem</b> plot of $\sin(100\pi t)$ and <b>line</b> plot of $\sin(30\pi t)$ .

3. Write a simple program to display multiplication times table from 2 to 5 times for *n* number of entries. NB. Use the command **input** to request for *n* number of entries. 4 Marks