Philadelphia University
Faculty of Engineering

Student Name:
Student Number

Dept. of Computer Engineering
First Exam, Second Semester: 2016/2017

Course Title: Engineering Analysis II	**Date: 29/3/2017**
Course No: (630262)	**Time Allowed: 50 minutes**

NOTES: - Round ALL your calculations to 4 significant digits
- Angles for trigonometric functions are in radian scale

Please choose your section:

Instructor:	☐	**Dr. Mohammed Mahdi**	☐	**Eng. Anis Nazer**	☐	**Eng. Sultan Al-Rushdan**	
Lecture time:	☐	**9:10 ح ث خ**	☐	**13:10 ح ث خ**	☐	**11:15 ن ر**	☐ **9:45 ن ر**

Question 1: **(8 marks)**

Given the following equation, start with $x_L=0$, $x_U=1$. **Perform three iterations using both bisection and false position methods**. Also, find the absolute error in the last iteration for both solutions.

$$x\left(x^2-5\right)=x-3$$

Question 2: **(6 marks)**

Consider the following equation:

$$\ln\left(x^2\right)=5$$

a) Write the Newton Raphson folrmula in the **simplest form**
b) Start with $x_0=10$ and perform iterations until the relative error is less than 0.003

Good Luck

Question 3: **(6 marks)**

Choose the answer in the following questions

Question	Answer
1) An approximation is correct for at least _____ significant digits if the relative error is less than 6.2×10^{-3} % A) 1 B) 2 C) 3 D) 4	
2) Assume that $[X]=\begin{bmatrix}1&2&3\\4&5&6\\7&8&9\end{bmatrix}$, $[Y]=\begin{bmatrix}1&1&1\end{bmatrix}$, and $[Z]=\begin{bmatrix}1\\1\\1\end{bmatrix}$ then [Y][X] = A) $\begin{bmatrix}12&15&18\end{bmatrix}$ B) $\begin{bmatrix}6&15&24\end{bmatrix}$ C) $\begin{bmatrix}6\\15\\24\end{bmatrix}$ D) the multiplication is invalid	
3) If $[A]=\begin{bmatrix}1&a_{12}\\2&-1\end{bmatrix}$ and $\lvert A\rvert=-7$, then $a_{12}=$ A) -3 B) 4 C) 3 D) cannot be determined	
4) Given $[A]=\begin{bmatrix}-3&5\\1&-1\end{bmatrix}$ and $[B]=\begin{bmatrix}7&-9\\4&2.5\end{bmatrix}$, which of the following statements is true ? (I) $[A][B]=[B][A]$ (II) $[A]^T+[B]^T=([A]+[B])^T$ A) (I) only B) (II) only C) (I) and (II) D) both are false	

Good Luck