Philadelphia University Faculty of Engineering Department of Computer Engineering		Date:- 31/12/2017 Allowed time:-50 minutes
Engineering Analysis II (630262)		**Second Exam**
Student Name:-……		**ID:-**……

Instructor: ☐ Dr. Mohamed Mahdi ☐ Eng. Sultan Al-Rushdan

Lecture Time: ☐ 09:10 ☐ 12:10 ☐ 12:45

Notes: All trigonometric functions are in radian scale.
Round your calculations to 4 significant digits

Question 1: Use **nonlinear regression** to find the exponential function $f(x) = Ce^{Dx}$ that best fit the following points. 7 points.

X	**-6.1**	**-5.2**	**-4.7**	**-4.1**	**-2.6**
y	**2.7**	**3.6**	**3.9**	**5.1**	**7.9**

Question 2: 7 points.

A) Approximate the solution of the following Integration using **Composite trapezoidal** rule with 7 sampling points (6 subintervals).

$$\int_{0.3}^{1.2} x(2\,ln(x)+1) - x^4(5\,ln(x)+1)dx$$

B) If the true solution of the integration is $x^2\ln(x) - x^5\ln(x)$ find the absolute Error with respect to true value.

Question 3: Given the following points. 6 points.

x	-3	1	2
f(x)	4	-4	-1

A. Use second order **Newton Interpolation Polynomial** to find f(x)
B. Use the result obtained in part A to find f(4).