

كلية الحاسبات والمعلومات  
الفرقة الثالثة  
اسم الطالب: .....

إمتحان العملى  
ديسمبر ٢٠١٣

حسابات علمية  
الزمن ٤٥ دقيقة

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**Answer the following three questions:** (Total Marks 20)

- 1) Write down the necessary MATLAB commands to perform the following:
  - a) (2 marks) Evaluate  $(|\log_2(0.5)|\tan^{-1}(0.79)) / (8e^3 \times 62^5)$ .
  - b) (2 marks) Solve the following algebraic equation
$$x^3 + 3x^2 = 0.$$
  - c) (2 marks) Factor the polynomial  $x^{10} - y^{10}$ .
- 2) Perform the following using Newton-Raphson Method:
  - a) (3 marks) Write a MATLAB program for approximating the solution of the algebraic equation  $2x^2 + x - 1 = 0$  for  $x_0 = 0$  to within  $10^{-5}$ .
  - b) (2 marks) Compute the exact solution using MATLAB.
  - c) (2 marks) Compute the actual error.
- 3) Perform the following using the Composite Simpson's Rule:
  - a) (3 marks) Write a MATLAB program for approximating
$$\int_3^5 \frac{1}{\sqrt{x^2 - 4}} dx$$
 using  $n = 8$ .
  - b) (2 marks) Compute the exact solution using MATLAB.
  - c) (2 marks) Compute the actual error.

**Best Wishes**