

كلية الحاسبات والمعلومات
الفرقة الثالثة
اسم الطالب:

إمتحان العملى
ديسمبر ٢٠١٣

حسابات علمية
الزمن ٤٥ دقيقة

B

Answer the following three questions: (Total Marks 20)

- 1) Write down the necessary MATLAB commands to perform the following:
 - a) (2 marks) Solve the following differential equation
$$y' = 2x, y(0) = 1.$$
 - b) Evaluate the following:
 - i. (2 marks) $\cos^2 x + \sin^2 x$.
 - ii. (2 marks) $\sinh(3)\sin(39)\ln|66|/e^5$.
- 2) Perform the following using Newton-Raphson Method:
 - a) (3 marks) Write a MATLAB program for approximating the solution of the algebraic equation $xe^x = 2$ for $x_0 = 0.5$ 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 Trapezium's Rule:
 - a) (3 marks) Write a MATLAB program for approximating
$$\int_0^{\pi} x \cos x dx$$
 using $n = 20$.
 - b) (2 marks) Compute the exact solution using MATLAB.
 - c) (2 marks) Compute the actual error.

Best Wishes