AFE BABALOLA UNIVERSITY, ADO-EKITI, EKITI STATE, NIGERIA
COLLEGE OF ENGINEERING
DEPARTMENT OF CHEMICAL AND PETROLEUM ENGINEERING

BACHELOR OF ENGINEERING ASSIGNMENT II

ENG 382: Engineering Mathematics IV

Session: 2019/2020 **Semester:** Second **Unit:** 3 **Duration:** 4 days

Instruction: Answer all the questions.

Question 1 [20 Marks]
The model of a system is as given in Equation (1). Taking the initial guess value and the maximum percentage absolute error to be 0.5 and 1E-21, respectively, write a MATLAB *mfile* program applying **Newton-Raphson** iteration method to find the value of x that satisfies $f(x) = 0$.

$$f(x) = e^{-0.5x}(4 - x) - 2 \quad (1)$$

The MATLAB program should be:
(i) written without using "*function*" command,
(ii) able to differentiate the function automatically, and
(iii) capable of showing the results (iteration number, values of x and errors) in tabular form.