AFE BABALOLA UNIVERSITY, ADO-EKITI, EKITI STATE, NIGERIA
COLLEGE OF ENGINEERING

BACHELOR OF ENGINEERING ASSIGNMENT III

PTE 521: Computer Applications in Petroleum Engineering

Session: 2019/2020 **Semester:** First **Unit:** 2 **Duration:** 3 days

Instruction: Answer all the questions.

Question 1 [20 Marks]

The temperature distribution model of a pipe of length $L = 2\,m$ is as given in Equation (1).

$$\frac{\partial T(z,t)}{\partial t} = 1.79\frac{\partial^2 T(z,t)}{\partial z^2} \tag{1}$$

Given that $T(z,0) = 2z^3$, $T(0,t) = 0$ and $T(L,t) = 16$, using $\Delta t = 0.01 hr$, with the aid of MATLAB PDE Toolbox, obtain the temperature profile of the system for $0 \le t \le 0.10\,hr$.