



**AFE BABALOLA UNIVERSITY, ADO-EKITI, EKITI STATE, NIGERIA**  
**COLLEGE OF ENGINEERING**  
**DEPARTMENT OF CHEMICAL AND PETROLEUM ENGINEERING**  
**B.ENG. CHEMICAL ENGINEERING ASSIGNMENT IV**

**CHE 532: Process Dynamics and Control II**

**Session:** 2019/2020

**Semester:** Second

**Unit:** 2

**Duration:** 4 days

**Instruction(s):** Answer all the questions.

**Question 1 [20 Marks]**

The model of a single-input single-output tank system is given as in Equation (1),

$$\frac{dh}{dt} = \frac{(F_i - \beta\sqrt{h})}{A} \quad (1)$$

where the area of the tank,  $A = 0.5 \text{ m}^2$ , the arbitrary constant,  $\beta = 1.5 \frac{\text{m}^2}{\text{min}}$  and the input flowrate,  $F_i = 0.7 \frac{\text{m}^3}{\text{min}}$ . Taking the initial value of the output variable to be  $0.01 \text{ m}$ , develop and solve the Simulink model of the system using an appropriate simulation time interval.

**NB:** Only Simulink model but no MATLAB mfile should be used.