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

**B.ENG. CHEMICAL ENGINEERING ASSIGNMENT II**

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

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

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

**Question 1 [20 Marks]**

Equation (1) shows the correlation for the pressure at the outlet $(P_o)$ to the pressure at the inlet $(P_i)$ of a pneumatic transmission line. With the aid of MATLAB/Simulink, estimate the outlet pressure if a ramp having a slope of 0.5 is applied to the input for 15 min.

$$\frac{\overline{P}_o(s)}{\overline{P}_i(s)} = \frac{e^{-\tau_d s}}{\tau_p s + 1}, \qquad \text{where } \frac{\tau_d}{\tau_p} \approx 0.25 \tag{1}$$