18/ENG 02/065 Emmanuel obo
COMPUTER ENG
ENG MATHEMATICS

1a Dynamic equation can refers to the diffrence equation in discrete diffential equation in continuous time. time scale calculus in combined discrete and continous time.

1b) An engineering System is described by the expession in equation, develop a dynamic model in Form of an ordinary diffrential equation For the System ($y = Ate^t$)

$y = Ate^t$ ..... (i) (where A is constant)

$dy/dt = At\, d/dt(e^t) + e^t\, d/dt(At)$

$dy/dt = Ate^t + Ae^t$ .... (ii)

From equation (i), Make Ae^t the Subject of Formular

$y = Ate^t$

$y/t = Ae^t$ ... (iii)

put equation (i) and (iii) in equation (ii)

$= \frac{dy}{dt} = yt \frac{y}{t}$

multiply through by t

$t\frac{dy}{dt} = ty + y$

$t\frac{dy}{dt} = (t+1)y$

$\therefore t\frac{dy}{dx} - (1+t)y = 0$