

Assignment No-1

- 1) Explain two practical examples of modern control theory.
- 2) Small computers are used in automobiles to control emission and obtain improved gas mileage. A computer controlled fuel injection system that automatically adjust the fuel-air mixture ratio could improve gas mileage reduce unwanted polluting emissions significantly. Sketch a block diagram for such a system for an automobile.
- 3) What is difference between closed loop feedback control system and closed loop feed forward control system?
- 4) Determine the signal flow model and matrix differential equation using the state variable format for a system with the transfer function

$$Y(s) / R(s) = T(s) = \frac{s^2 + 7s + 2}{s^3 + 9s^2 + 26s + 24}$$

- 5) Define the following terms:
 - State of a system
 - State variables
 - State vector
 - State differential equation