Q.1

a) True

b) True

c) True

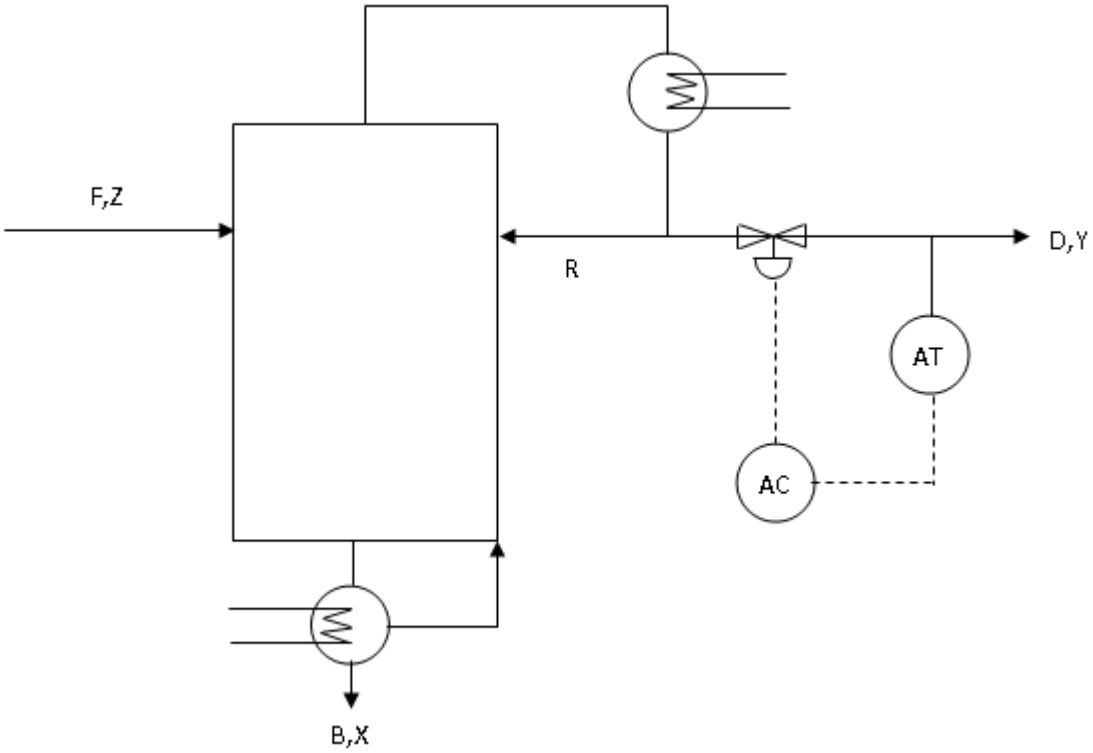
d) False

e) True

Q.2

a) Feedback Control: Measured Variable y

Manipulated Variable: D, R, or B(Schematic shows D)



AT—Analyzes/Transmitter

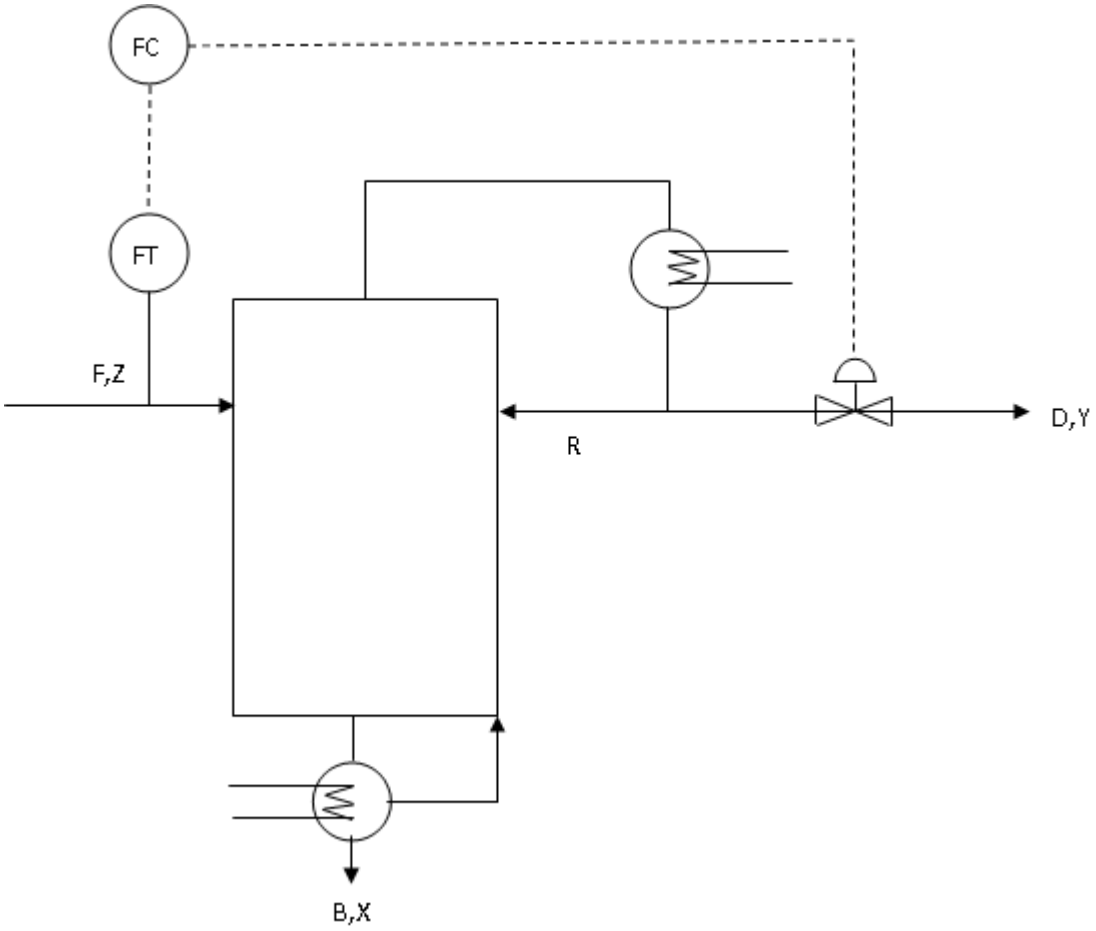
AC is composition (analysis) controller

b) Feedforward control: Measured variable, F

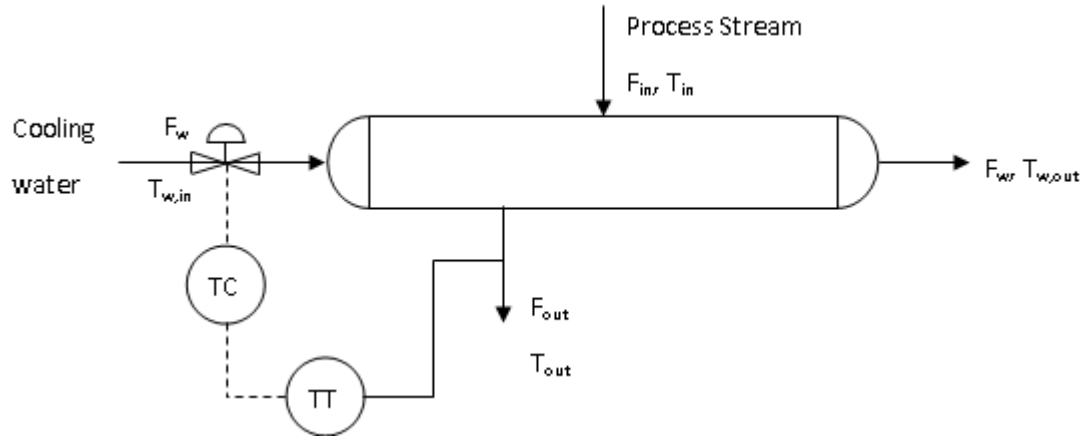
Manipulated variable D(shown), R or B.

FT is flow transmitter

FC is flow controller



Q.3



TT: temperature transmitter

TC: Temperature controller

Controlled variable: T_{out}

Manipulated variable: F_w

Q.4

Controlled variable: product composition, temperature, liquid level

Disturbance: Feed temperature, composition

Manipulation:

----For level control

Measure liquid level and control the flow state of feed or effluent. Here effluent is selected.

----For temperature

Measure temperature in reactor and control the coolant flow state.

----For product composition

With temperature fixed, use feed composition to influence the exit composition. Here product composition is measured and reactant flow is manipulated.