Q.3

Ans-

For designers, the goal for designing heat exchanger is to heat or cool the certain fluid of specific mass flow rate and temperature.

By using equation

Q=m\*Cp\*(Tin-Tout)

This equation gives the idea about the requirement of heat exchanger before having any idea of heat exchanger itself.

There are several factors for the selection of the heat exchanger such as Heat transfer rate required, Cost, Size and Weight, Material, Type and Pumping power.

**Cost**- It plays very important role in selection of the heat exchanger. The operation and maintenance cost of heat exchanger are important consideration in assessing the overall cost.

**Pumping power**- Both the fluids are forced through heat exchanger with the help of pump. Annual cost of electricity associated with the operation of the pump

*Operating cost=Pumping power \* Hours of operation \* price of electricity*

Minimizing the pressurization will reduce the cost of pumping but will maximize the size of heat exchanger and hence the initial cost.

**Size and weight**- Mostly the smaller and lighter the heat exchanger, the better it is. In aerospace and automotive industries the size and weight of heat exchanger required is small and light weight.

As the size increases the price of heat exchanger increases. Size of heat exchanger can be limited by the space available to install heat exchanger.

**Heat Transfer rate**- It is most important factor in the selection and designing of heat exchanger. Heat exchanger should be capable of transferring desired amount of heat to achieve the desired temperature range for given mass flow rate.