REFRIGERATION AND CRYOGENICS – exercises , year III
List III

Example1
Identify a refrigerating cycle with subcooling for R 12 refrigerant and following characteristic temperatures: -5/+5/35^{o}C. In subcooler temperature of the liquid is decreasing by 10 K and refrigerating capacity of the system is $\dot{Q}_{rc} = 5\ kW$. Repeat a calculation for R717 and R134a refrigerants.

Example2
Identify a refrigerating cycle with subcooling for R 290 refrigerant and following characteristic temperatures: -15/-5/30^{o}C. How dose refrigerating effect, compressor work and COP changes if in subcooler temperature of the liquid is decreasing by 0, 5, 10 and 15 K?

Example 3
Identify a refrigerating cycle with Suction Gas Heat Exchanger (SGHE) for R 134a refrigerant. Evaporating temperature is -15°C, condensation temperature is +45°C and refrigerating capacity of the system is $\dot{Q}_{rc} = 10\,\text{kW}$.

Example 4
Refrigerating cycle is supplied by R12 refrigerant. Evaporating and condensation temperature are -30 and 40°C. Select (form one or two stage type) and identify a refrigeration cycle for suitable such temperature range. Motive your selection.

Example 5
Identify a two stage refrigerating cycle with flash cooler for R 134a refrigerant. Evaporating temperature is -25°C, condensation temperature is +35°C and refrigerating capacity of the system is $\dot{Q}_{rc} = 7\,\text{kW}$.