2)

a) Cv = 3R Cp = R + Cv

= 24.942 = 8.314 + 24.942

= 33.256

b) n = PV/RT

= (1.013E6 x 0.25)/(8.314 x 573.13)

= 53.15 mol

c) Q=nCpT

=53.15 x 33.256 x200

= 3.54E5

d) Q = nCvT

= 53.15 x 24.942 x 200

= 2.65E5

3)

a) E=pt

=2000 x 3600

= 7 200 200

b) W = 7.2E6

Qc = Qh – W = 2.95E7

COPcool = Qc/W

= 2.95E7/7.2E6

= 4.1