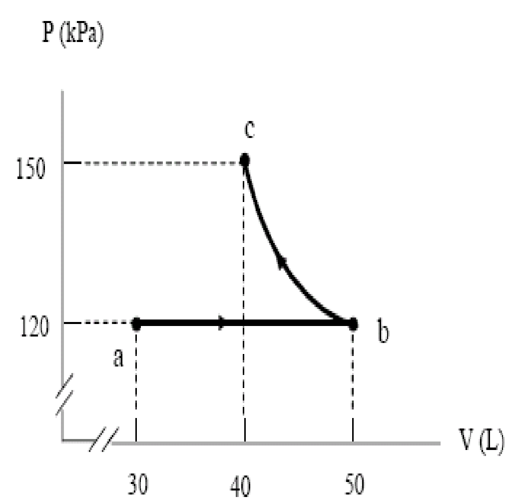
**Q#1.** A sample of an ideal gas is compressed by a piston from 10 $m^3$ to 5 $m^3$ and simultaneously cooled from 540 K to 270 K. As a result there is: (Ans: No change in pressure).

**Q2.** One mole of an ideal gas is cooled at constant pressure process from 100 $^oC$ to 40 $^oC$. Calculate the work done during the process. (Ans: –500 J)

**Q3.** 6 moles of an ideal gas are kept at a constant temperature of 60 .0 $^oC$ while the pressure of the gas is increased from 1.00 atm to 4.00 atm. Find the heat involved during this process. (Ans: -23 kJ)

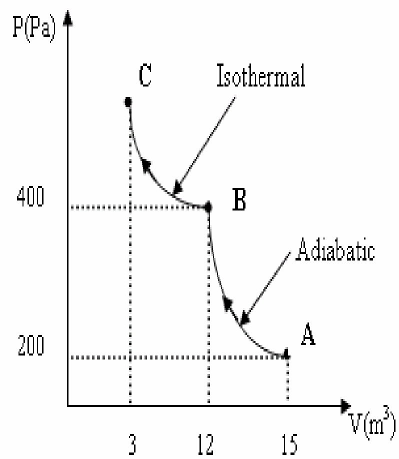
**Q#4** Five moles of an ideal gas are kept at a constant temperature of 53.0 degrees Celsius while the pressure of the gas is increased from 1.00 atm to 3.00 atm. Find the work done in the process. ( **A1 14.9 kJ of work done on the gas**.)

**Q#5.** An ideal gas expands at constant pressure of 120 kPa from (a) to (b) as shown in the Figure 1. It is then compressed isothermally to point (c) where the volume is is 40 L. Find the net work done during these two processes ( Ans: 1060 J )



**Q11.** An ideal monatomic gas, undergoes an adiabatic expansion to one-third of its initial pressure. Find the ratio of the final volume to the initial volume. (Ans: 1.9)

**Q12.** Two moles of an ideal monatomic gas are compressed adiabatically from A to B and then further compressed isothermally from B to C as shown in the figure 1. Calculate the net heat transfer in the process from A to C. (Ans: -6.7 kJ)




**Q13** A diatomic ideal gas undergoes a constant pressure process in which its internal energy increases by 540 J. Find the heat added to the gas and the work done by the gas. (**A1: Q = 756 J, W = 216 J**. )

**Q14)** Two moles of helium (monatomic) gas are heated from 100 degrees Celsius to 250 degrees Celsius. How much heat is transferred to the gas if the process is done at constant pressure? (**A1: 6.23 kJ)**

**Q15)** Two moles of a monatomic ideal gas is compressed at a constant pressure of 1.5 atm from a volume of 70 liters to 35 liters. Calculate the change in internal energy of the gas. **( - 1.3*10**4 J** )

**Q16)** An ideal diatomic gas, initially at a pressure Pi = 1.0 atm and volume Vi, is allowed to expand isothermally until it's volume doubles. The gas is then compressed adiabatically until it reaches its original volume. The final pressure of the gas will be:( **A1: 1.3 atm)**