

- 2 (a) (i) State the first law of thermodynamics.

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[2]

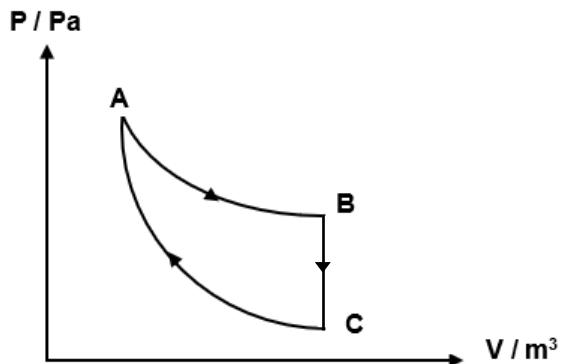
- (ii) Use first law of thermodynamics to explain how roasting of potatoes causes its temperature to rise.

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[3]

- (b) An ideal gas undergoes a cycle of changes A → B → C → A as shown in Fig. 2.1.

Process A to B takes place at constant temperature of 310 K. Process B to C takes place at constant volume and during this process, 55 J of heat leaves the system. The temperature at C is 280 K. Process C to A takes place with no heat exchange.



**Fig. 2.1**

- (i) Calculate the change in internal energy of the gas during the process B to C.

$$\text{change in internal energy} = \dots \text{J} [2]$$

- (ii) Determine the work done by the gas during the process C to A.  
Explain your working clearly.

$$\text{work done by the gas} = \dots \text{J} [3]$$

[Total: 10]