



--	--	--	--	--	--

Note:-

1. All Questions are compulsory.
2. Numbers on the right indicate full marks.

Section A

Q.1 Select and Write the correct answer.

(4)

1. During refrigeration cycle, heat is rejected by the refrigerant in the :
A) condenser B) cold chamber
C) evaporator D) hot chamber
2. Intensive variable do not depend on the of the system.
A) Shape B) Volume
C) Mass D) Size
3. The coefficient of performance of a carnot refrigerator working between 30° and 0° is
A) 10 B) 1
C) 9 D) 10
4. An ideal gas at 27° degree Celsius is compressed adiabatically to $\frac{8}{27}$ of its original volume. If $r = \frac{5}{3}$ then the rise in temperature is
A) 450 K B) 375 K
C) 225 K D) 405 k

Q.2 Answer the following.

(3)

1. Define : Irreversible process.
2. Represent equation of an adiabatic process in terms of (i) T and V (ii) P and T.
3. What are the parts of a heat engine?

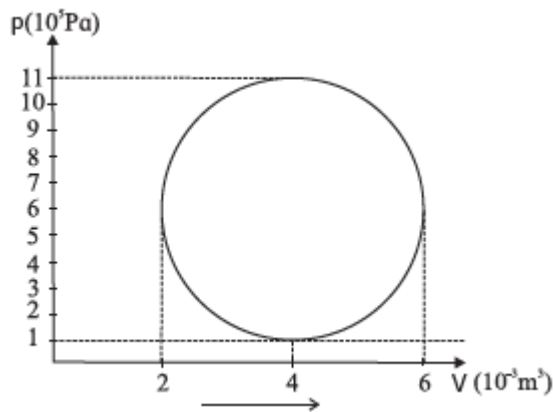
Section B
Attempt any Four

- Q.3 When the temperature of a system is increased or decreased in an adiabatic heating or cooling, (2) is there any transfer of heat to the system or from the system?
- Q.4 State zeroth law of thermodynamics. (2)
- Q.5 Derive thermodynamics of Isochoric process. (2)
- Q.6 Explain quasistate process. (2)
- Q.7 A refrigerator is to maintain eatables kept inside at 9°C . If room temperature is 36°C , calculate (2) the coefficient of performance.

- Q.8 A steam engine delivers 5.4×10^8 J of work per minute and services 3.6×10^9 J of heat per minute from its boiler, what is the efficiency of the engine? How much heat is wasted per minute? (2)

Section C
Attempt any Two

- Q.9 Explain classification of thermodynamics system on basis of transfer of heat and matter to environment. (3)
- Q.10 Derive the relation between coefficient of performance (α) and efficiency of heat engine (η). (3)
- Q.11 A hypothetical thermodynamic cycle is shown in the figure. Calculate the work done in 25 (3) cycles.

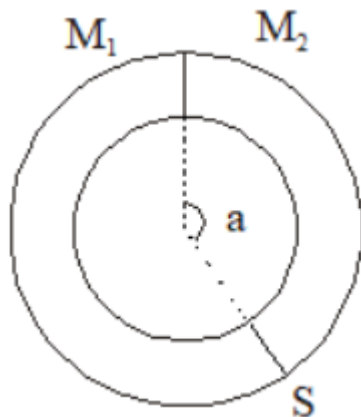


Section D
Attempt any One

- Q.12 Can you explain the thermodynamics involved in cooking food using a pressure cooker? (4)

Fill in the Blanks:

A ring shaped tube contains two ideal gases with equal masses and relative molar masses $M_1 = 32$ and $M_2 = 28$. The gases are separated by one fixed partition and another movable stopper S which can move freely without friction inside the ring. The angle α as shown in the figure is degrees (1997, 2M)



- Q.13 Explain how work is done during a thermodynamic process. (4)
(OR)
Explain how work is done by a system depends not only on the initial and the final states, but also on the intermediate states.