

(B.P. SINGH)

Question:- In a VARS, heat is given to the generator at 90°C . The temp. of condenser and evaporator are 20°C and -10°C in cooling and heat absorption. Find the maximum COP of the system.

Given data:-

$$T_h = 90^{\circ}\text{C} ; T_o = 20^{\circ}\text{C} ; T_E = -10^{\circ}\text{C}$$
$$= 363\text{ K} \quad = 293\text{ K} \quad = 263\text{ K}$$

To find out:- $\left[\text{COP}_{\text{VARS}} = \left(\frac{T_h - T_o}{T_h} \right) \times \left(\frac{T_E}{T_o - T_E} \right) \right]$

$$\text{COP}_{\text{VARS}} = \left(\frac{363 - 293}{363} \right) \times \left(\frac{263}{293 - 263} \right)$$

$$(\text{COP}_{\text{VARS}} = 1.69) //$$

Important Qn. of this chapter:- (6)

- (1) Explain the working principle of VARS with suitable diagram.
- (2) Explain the working of extralux Refrigerator system.
- (3) How the solar power Refrigeration system works? What are the advantages and disadvantages of solar refrigeration system over VARS.

AIR REFRIGERATION SYSTEM

- (1) Explain the working cycle of Bell-Coleman cycle with the help of P-v and T-S diagram. Find the COP.
- (2) What are the advantages and disadvantages of ARS over VARS.
- (3) Explain the working principle of Bootstrap Refrigeration system with the help of line diagram.