

### **Q7. SET A**

An air conditioning system is working on two-mode control system. The room temperature is to be maintained at 23 deg. C, with a neutral zone of  $\pm 10\%$ . The room temperature is sensed by an RTD with a lag of 0.5 min. When the cooling system is ON, the rate of cooling of the room is 3 deg.C drop per minute. When the cooling system is OFF, the temperature rises with a rate of 2 deg.C per min. Plot the temperature variation curve and find the oscillation period of the temperature. Also show the ON/OFF cycle cooling system on the time graph. [6]