

**J C Bose University of Science and Technology, YMCA, Faridabad**  
**Department of Mechanical Engineering**  
**Refrigeration and Air Conditioning**  
**PCC-ME-504/21(V Semester)**  
**2<sup>nd</sup> Test**  
**November-2025**

**Time 90 Minutes**

**Maximum Marks 15**

**Note: Attempt any three questions. Use of PH chart, Psychrometric Chart and steam table is allowed. Parts of same question must be attempted together. Missing data, if any, may be assumed suitably.**

Q. No.		Marks	CO
1.	A sling psychrometer reads 35°C DBT and 25°C WBT, calculate the followings: (i) Specific humidity (ii) Relative humidity (iii) Dew-point temperature (iv) Enthalpy of mixture. Assume pressure of atmosphere air to be 1 bar. Use the Psychrometric Chart is allowed.	05	3
2.	Discuss the conditions of comfort you would prescribe for office building in a city like Madras which has hot and humid climate.	05	3
3.	An air-conditioned plant is to be designed for a small office room for winter conditions. Out-door conditions= 10°C DBT and 8°C WBT. Required indoor-conditions= 20°C DBT and 60% R.H. Amount of free air circulation= 0.3 m <sup>3</sup> /min/person. Seating capacity of the office= 50 The required condition is achieved first by heating and then by adiabatic humidifying. Find the followings : (a) Heating capacity of the coil in kW and the surface temperature required if the bypass factor of coil is 0.32. (b) The capacity of the humidifier.	05	3
4.	Define a duct. Explain various types of and their use in a comfort system.	05	4