

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

Time 90 Minutes

Maximum Marks 15

Note: Attempt any three questions. Use of PH chart, Psychometric 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 Psychometric 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 ³ /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 |