

GUJARAT TECHNOLOGICAL UNIVERSITY**M.E Sem-II Remedial Examination December 2010****Subject code: 722103****Subject Name: Advanced Air Conditioning****Date: 21 /12 /2010****Time: 02.30 pm – 05.00 pm****Total Marks: 60****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Explain factors which affecting the air conditioning system selection. **06**
 (b) Explain central air conditioning system. **06**
- Q.2** (a) A building has the following calculated cooling loads: **06**
 RSH gain = 310 kW, RLH gain = 100 kW
 The space is maintained at the following conditions:
 Room DBT = 25⁰C, Room RH = 50%
 Outdoor air is at 28⁰C and 50% RH. And 10% by mass of air supplied to the building is outdoor air. If the air supplied to the space is not to be at a temperature lower than 18⁰ C, find:
 a) Minimum amount of air supplied to space in m³/s.
 b) Volume flow rates of return (recirculated room) air, exhaust air, and outdoor air,
 c) State and volume flow rate of air entering the cooling coil
 (b) Explain solar radiation for calculation of cooling load of building. **06**
- OR**
- (b) Explain Bypass factor in detail. **06**
- Q.3** (a) Give purposes of air conditioning controls & list out various air conditioning control devices & explain any one. **06**
 (b) A fan delivers 600 m³/min against 370 Pa SP with an outlet velocity of 600 m/min and a static efficiency of 75%. Calculate : **06**
 a) Total Pressure b) Air power
 c) Brake Power d) Total or Mechanical Efficiency
- OR**
- Q.3** (a) Discuss factor for selection of air outlet. **06**
 (b) Explain performance index (ADPI) & its use in outlet selection. **06**
- Q.4** (a) Explain any one method of duct design. **06**
 (b) Explain general rule & procedure in duct design. **06**
- OR**
- Q.4** (a) Explain evaporative condenser & compare with cooling tower. **06**
 (b) Explain testing of desert cooler as per BIS. **06**
- Q.5** (a) What is 'clean room condition'? What are its typical applications? **06**
 (b) Explain test methods to measure efficiencies for air filters. **06**
- OR**
- Q.5** (a) Give comparison between various types of fans used in air handling system. **06**
 (b) Explain different methods of noise reduction in air conditioning system. **06**
