



VII SEMESTER B.TECH (ELECTRICAL & ELECTRONICS ENGINEERING)

END SEMESTER EXAMINATIONS, DECEMBER 2018

SUBJECT: BUILDING AUTOMATION SYSTEMS [ELE 4016]

REVISED CREDIT SYSTEM

Time: 3 Hours

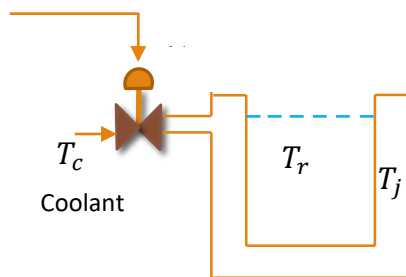
Date: 03 DECEMBER 2018

Max. Marks: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

- 1A. Explain any two implementation issues of derivative term in a PID controller. How are the issues addressed? (05)
- 1B. What are the drawbacks of feedback control structure? How are they addressed using feedforward control? Configure cascade control structure to control the reactor temperature for the system given in Fig. 1B



T_c – Coolant Temperature
 T_r – Reactor Temperature
 T_j – Jacket Temperature

Fig. 1B

- 2A. What is relative humidity? What is its importance? How is dry bulb temperature and wet bulb temperature indicate relative humidity? (04)
- 2B. With neat diagram, explain the working of Coriolis mass flow meter. Mention any two major advantages of this meter (04)
- 2C. How does Intrusion Detection System work? Give examples (02)
- 3A. With neat diagrams/blocks, explain how CAV and VAV systems work (04)
- 3B. A heating coil raises the temperature of air flowing through it from 15°C to 40°C. If 120 kg per minute of air flow through the heater, how much heat must be supplied to the air per hour? (Specific heat of water = 4.18 kJ/kg. K.) (02)
- 3C. Solve the following using psychrometric chart
- i) The air emerging from a dryer, with an exit temperature of 30°C, passes over a surface which is gradually cooled. It is found that the first traces of moisture appear on this surface when it is at 21°C. Estimate the relative humidity of the air leaving the dryer
 - ii) An air mixture supplied to a conditioned room consists of 40% by-passed return air withdrawn from the conditioned room, and 60% chilled air at 13°C. The conditioned room is maintained at 25°C. Find the resulting dry bulb temperature of the mixture (04)

- [illegible]