304208

Seat No.	

T.E. (Electronics) (Semester – II) Examination, 2014
SENSORS AND INTERFACES
(2008 Course)

Time : 3 Hours Max. Marks : 100

Instructions : *1) Answers to the **two** Sections should be written in separate answer books.*
*2) Answer **any three** questions from **each** Section.*
*3) Neat diagrams must be drawn **wherever** necessary.*
*4) Figures to the **right** side indicate **full** marks.*
*5) Use of Calculator is **allowed**.*
*6) Assume suitable data if **necessary**.*

SECTION – I

1. a) Explain with neat diagram electromagnetic flow meter. **8**

   b) Define humidity and state the formula for relative humidity. Explain resistive and capacitive hygrometers for the measurement of relative humidity. **8**

OR

2. a) Compare thermocouple, RTD and semiconductor temperature sensors. **8**

   b) Explain how incremental optical encoder can used for measurement of speed of rotation of the shaft of DC servo motor. **8**

3. a) Explain microcontroller interface for PT100 RTD using a bridge circuit, instrumentation amplifier and an ADC. **8**

   b) Explain with neat diagram I to P and P to I converters. **8**

OR

4. a) Explain with neat block diagram working principle of a SMART and intelligent transmitter. **8**

   b) Explain with circuit diagram V to I and I to V converters. **8**

5. a) State different types of ADC and DAC and give the specifications of ADC. **8**

   b) Enlist the features of PIC micro controller. Draw and explain interfacing of LCD with PIC 16F84. **10**

OR

6. a) Draw and explain the interfacing of ADC with 8051 microcontroller. **10**

   b) A LM35 semiconductor temperature sensor is to be interfaced with 8051 seires microcontroller. Suggest a suitable signal conditioning scheme. **8**

P.T.O.

SECTION – II

7. a) Write short note on foundation field bus. **8**

   b) Explain two communication modes of HART protocol. **8**

OR

8. a) Explain with neat diagram IEEE488 bus interface for test and measurement instruments. **8**

   b) Explain computerized Data Logger with block diagram. **8**

9. a) Describe a lift system to move the load up and down using pneumatic actuators. **8**

   b) Compare pneumatic and hydraulic actuators. **8**

OR

10. a) Draw control valve characteristics and explain the terms linear, equal percentage and quick opening. **8**

    b) Explain the role of relays and solenoid valves with any one application. **8**

11. a) Develop a ladder diagram for a START and STOP operation of an electric motor. The motor should be turned off on thermal overload. Green light to indicate safe operation and Red light to indicate thermal overload. **10**

    b) Write short note on : **8**
       i) Analog Input/Output of PLC
       ii) Interfacing input and output devices with PLC

OR

12. a) Explain architecture of PLC with block diagram. Draw ladder diagram to implement NAND and NOR gates. **10**

    b) Give important specifications and selection criterion of a PLC. **8**
