Total No. of Questions :12]

SEAT No. :

P1630

[Total No. of Pages :3

[5058] - 77

T.E. (Electronics)

SENSORS AND INTERFACES

(2008 Pattern) (Semester - II) (304208)

Time : 3 Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answer any 03 questions from each section.***
2) ***Answer to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***
5) ***All questions carry equal marks.***
6) ***Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tobles is allowed.***
7) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Explain principle of flow measurement. Describe pitot tube used for flow measurement. **[8]**

b) Explain pH measurement with neat diagram. **[8]**

OR

Q2) a) Explain selection criterion for choosing a sensor/transducer. **[8]**

b) Explain incremental and absolute rotary encoders for angular velocity measurement. **[8]**

Q3) a) Explain with neat diagram I/P converter and P/I converter. **[8]**

b) Explain any one technique for level and humidity measurement. **[8]**

OR

P.T.O.

Q4) a) A sensor outputs a range of 10 to 200mv, as a variable varies over its range. Develop a signal conditioning circuit using 3 OP Amp instrumentation amplifier so that it becomes 0 to 5 V. **[8]**

b) Write a short note on SMART transmitter. **[8]**

Q5) a) Enlist the features of PIC microcontroller. Draw and explain interface of matrix keyboard with PIC 16 F 84. **[10]**

b) State the different types of ADC and state their specifications. **[8]**

OR

Q6) a) Enlist the features of 8051 series microcontroller. Draw and explain interfacing of following devices with 89C51 microcontroller. **[10]**

i) ADC

ii) Electromechanical relay.

b) Enlist different types of DAC and give performance parameters for selection of DAC. **[8]**

SECTION - II

Q7) a) Write short note on I^2C bus. **[8]**

b) Explain with block diagram computer based data logger. **[8]**

OR

Q8) a) Write short note on foundation field bus. **[8]**

b) Explain HART communication protocol along with its modes of operation. **[8]**

Q9) a) Explain lift system to move the load up and down using pneumatic actuators. **[8]**

b) Explain principle of operation of DC motor. State various types of D.C. motor. **[8]**

OR

Q10)a) Explain with neat diagram pressure control valves. **[8]**

b) Explain following types of valves with neat diagram. **[8]**

i) Spool valve

ii) Poppet valve.

Q11)a) Explain the PLC operating cycle. **[8]**

b) With suitable assumptions draw the block diagram of a bottle filling plant & develope a PLC ladder diagram for the automatic operation of bottle filling plant. **[10]**

OR

Q12) Write short note on: **[18]**

a) Selection of PLC.

b) Input and Output devices for PLC.

c) Analag input / output for PLC.