Total No. of Questions : 12]

SEAT No. :

P2330

[Total No. of Pages :3

[4758] - 65
T.E.
ELECTRONICS
Sensors and Interfaces
(2008 Pattern) (Semester - II) (304208)

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

Instructions to the candidates:

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

SECTION - I

Q1) a) Explain various types of optical proximity sensors. **[8]**

b) List various temperature sensors. Explain any two. **[8]**

OR

Q2) a) Explain incremental and absolute rotary encoders for angular velocity measurement. **[8]**

b) Explain the use of load cell for force measurement and its type. **[8]**

Q3) a) Explain with neat diagram voltage to frequency and frequency to voltage converters. **[8]**

b) State important features of a SMART transmitter and explain its working with a block diagram. **[8]**

OR

Q4) a) Explain with neat diagram I/P converter and also explain its input output characteristics. **[8]**

b) Explain the passive circuits used in analog signal conditioning. **[8]**

P.T.O.

Q5) a) List the features of PIC micro controller. Draw and explain interface of 4×4 matrix keyboard with PIC 16F 84. **[10]**

b) Describe working of R-2R ladder type DAC. How it is advantageous over weighted resistor DAC. **[8]**

OR

Q6) a) Draw and explain interfacing of 89C51 microcontroller with LCD and relay. **[10]**

b) Explain selection criteria for ADCs related to sensor interfacing. **[8]**

SECTION- II

Q7) a) Explain HART communication protocol along with its modes of operation. **[8]**

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

OR

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

b) Explain with block diagram multichannel data logger system. **[8]**

Q9) a) Explain with neat diagram pressure control valves. **[8]**

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

OR

Q10)a) Draw and explain symbols of following pneumatic values. **[8]**

i) 2×2 Valve

ii) 3×2 Valve

iii) 4×2 Valve

iv) Pressure limiting valve

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

Q11)a) Develop a ladder diagram for a circuit that can be used to start a motor and then after delay of 100sec. Start a pump. When the motor is switched off there should be a delay of 10 sec. before the pump is switched off. **[8]**

b) With block diagram explain PLC architecture. State important specifications of PLC. **[10]**

OR

Q12)a) Explain the PLC operating cycle. **[8]**

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

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