Total No. of Questions : 12]

SEAT No. :

P3915

[Total No. of Pages : 2

[4859] - 117A

B.E. (Electronics) (Semester - I)

MECHATRONICS

(2008 Pattern) (Elective - I)

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

Instructions to the candidates:

1) ***Answer questions 1 or 2, 3 or 4, 5 or 6, 7 or 8, 9 or 10, 11 or 12.***
2) ***Answers to the two sections should be written in separate answer books.***
3) ***Neat diagrams must be drawn whererver necessary.***
4) ***Figures to the right side indicate full marks.***
5) ***Assume suitable data, if necessary.***

SECTION - I

Q1) a) Define Mechatronics. Explain the role of Mechatronics in design of elevator system. **[10]**

b) What are the functions of Mechatronics System? Explain the key elements of Mechatronics in detail. **[8]**

OR

Q2) a) Explain the term static characteristics and dynamic characteristics. Explain the terms: **[10]**

i) Speed of respose

ii) Fidelity

iii) Measuring lag

b) State different types of gears. Explain any two types of gears with their applications. **[8]**

Q3) a) Define the term pressure. Explain in detail LVDT for pressure measurement. **[8]**

b) What is a model? Explain Elastic system modelling in detail. **[8]**

OR

Q4) a) Write a short note on proximity sensors. **[8]**

b) Explain position measurement system using ultrasonic method. **[8]**

P.T.O.

Q5) a) What are the important specifications of ADC and DAC? Explain in detail. **[8]**

b) Define the term PLC. List the different specifications of PLC. Which different input and outputs used in PLC? **[8]**

OR

Q6) a) Write a short note on Pulse width Modulation and Programmable electro hydraulic valves. **[8]**

b) Explain drive system load calculation and VFD in detail. **[8]**

SECTION - II

Q7) a) Explain in detail the design of a mobile robot. **[8]**

b) Write a short note on HART Protocol. **[8]**

OR

Q8) a) With the help of suitable diagram explain principle and working of magnetic recorder. **[8]**

b) Explain RS 232 standard in detail. **[8]**

Q9) a) Explain the operation of CNC machine with the help of neat block diagram. **[8]**

b) Explain UART in detail. **[8]**

OR

Q10)a) Describe General Purpose Interface Bus standard. **[8]**

b) Write short note on RS-422 and RS-485 interfaces. **[8]**

Q11)a) Explain a data logger for a milk filling plant having conveyer based filling and sealing system. **[10]**

b) Write short note on signal conditioning and signal conversion. **[8]**

OR

Q12)a) Discuss working of copying machine with block diagram. **[10]**

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