

Total No. of Questions : 12]

SEAT No. :

P1769

[4659] - 114

[Total No. of Pages : 3

B.E. (Electronics Engg.)

d - MECHATRONICS

(2008 Course) (Elective - I) (Semester - I) (404204)

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 wherever necessary.*
- 4) *Figures to the right indicate full marks.*
- 5) *Assume Suitable data if necessary.*

SECTION - I

- Q1)** a) Define Mechatronics Systems. Explain any two components with their major functions. **[8]**
- b) Explain in detail, modelling procedure of Mechatronics systems with suitable example. **[8]**
- Q2)** a) State different types of chains and sprockets. Mention application of each in detail. **[8]**
- b) With suitable example, explain the step wise design procedure for any one Mechatronics System. **[8]**
- Q3)** a) What is Elastic system modeling? Explain in detail. **[8]**
- b) What is a model? Explain simple dynamic models. **[8]**
- Q4)** a) Explain any two common structures in Mechatronics in detail. **[8]**
- b) What are the different methods to model Electromechanical systems? Quote suitable example. **[8]**

P.T.O.

- Q5)** a) Explain specifications and selection criterion for different level sensors used in Mechatronic systems. [8]
b) Explain different types of mechanical actuators with suitable examples. [10]

- Q6)** a) Write short note on DC brushed motors and DC servo motors. [10]
b) Explain variable frequency drives and drive system load calculation with reference to Mechatronic systems. [8]

SECTION - II

- Q7)** a) What is integrated modeling? Explain case study of a Mobile Robot. [8]
b) Explain Hill climbing algorithm and Genetic algorithm. [8]

- Q8)** a) What are the different methods adopted for optimization of Mechatronic systems? Explain with example. [8]
b) What are the key elements of controlled Mechatronic systems? Explain in detail. [8]

- Q9)** a) Explain Universal asynchronous receiver transmitter (UART) in detail with its standard specification. [8]
b) Write a short note on RS-232, IEEE 488-GPIB. [8]

- Q10)** a) What are different communication protocols? Explain in detail. [8]
b) Explain architecture of a standard PLC with different steps used in its working. [8]

- Q11)**a) Explain multichannel data logger with neat block diagram. [10]

b) Explain a data logger for a coffee vending machine using its standard accessories. [8]

Q12)a) Discuss a data acquisition system using any three standard parameters as a Mechatronics case study. [10]

b) Write short note on [8]

i) Signal Conditioning

ii) Signal Conversion.

