

Total No. of Questions : 12]

SEAT No. :

P4905

[Total No. of Pages : 2

[4959] - 117-A
B.E. (Electronics)
MECHATRONICS
(2008 Pattern) (Elective - I(d)) (Semester - 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 wherever necessary.*
- 4) Figures to the right side indicate full marks.*
- 5) Assume suitable data if necessary.*

SECTION - I

- Q1)** a) Explain in detail different mechanical components bearings, bushings, brakes and clutches. **[8]**
- b) Explain the role of Mechatronics system and also in detail design approach for mechatronics system. **[8]**
- Q2)** a) Write short note on chains and sprockets. **[8]**
- b) Explain the modelling procedure of Mechatronics System. **[8]**
- Q3)** a) Write a short note on common structures of mechatronics system. **[8]**
- b) What is modelling and Explain simple dynamic models in detail. **[8]**
- Q4)** a) Define actuator and explain different actuators in detail. **[8]**
- b) Write short note on DC motors and servo motors. **[8]**

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- Q5) a)** Explain selection criteria, principle of operation and specifications for force measurement. [10]
b) Write short note on DC brushless motors and DC brushed motors. [8]
- Q6) a)** Explain vector drives and drive system load calculation in detail. [10]
b) Write a short note on Programmable electro hydraulic valves and 4-quadrant servo drives. [8]

SECTION - II

- Q7) a)** Explain role of controls in mechatronics system. [8]
b) Explain in detail the mobile robot design. [8]
- Q8) a)** What are special requirements of Mechatronics that differentiate from classic systems and control design? [8]
b) What is integrated modelling? Explain the design of a simple servo system. [8]
- Q9) a)** Explain architecture of PLC with neat block diagram. [8]
b) Explain different types of communication and data flow control. [8]
- Q10) a)** Explain UART in detail. [8]
b) Write short note on Error handling and serial interface standards. [8]
- Q11) a)** Design and explain data logger for a milk filling plant having conveyer based filling and sealing system. [10]
b) Explain in details signal conditioning unit. [8]
- Q12) a)** Draw and explain working of copying machine. [10]
b) Describe in detail multichannel data logger. [8]

