

Total No. of Questions :10]

SEAT No. :

**P3631**

[Total No. of Pages : 2

**[4959]-1120 A**

**B.E. (Electronics)**

**d-MECHATRONICS**

**(2012 Course) (Elective - IV) (Semester-II) (404212)**

*Time : 2½ Hours]*

*[Max. Marks : 70*

**Instructions to the candidates:**

- 1) Neat diagrams must be drawn wherever necessary.**
- 2) Figures to the right indicate full marks.**
- 3) Assume suitable data, if necessary.**

**Q1) a) List the phases in mechatronics design process. Explain with neat diagram. [6]**

**b) Explain functions of mechatronics system. [4]**

**OR**

**Q2) Write short note on (Any Two): [10]**

- a) Brakes.**
- b) Autonomous mechatronics system.**
- c) Network mechatronics system.**

**Q3) a) Explain V-model of designing of self optimizing system. [6]**

**b) Differentiate design fetch at system level and module level. [4]**

**OR**

**Q4) a) Design mobile robot with neat diagram. [6]**

**b) Explain key elements of control mechatronics system. [4]**

**Q5) a) Explain in detail TIA / EIA serial interface standards. [10]**

**b) Write a short note on UART with neat diagram. [8]**

**OR**

**P.T.O.**

**Q6)** Write short note on following (Any Three): **[18]**

- a) Unbalanced Vs Balanced transmission.
- b) Point to point Vs. multipoint communication system.
- c) Asynchronous serial data format.
- d) Simplex, Half Duplex & full duplex.

**Q7)** a) Explain in detail functional requirement of data logger. **[10]**

- b) What are the software options available in data logging system. Explain. **[6]**

OR

**Q8)** a) Explain case study of any one application of data logging system in mechatronics. **[10]**

- b) Write a short note on: **[6]**
  - i) Online analysis.
  - ii) Offline analysis.

**Q9)** a) Explain in detail X-ray based fabrication of MEMS. **[10]**

- b) What are the mechanical properties of MEMS. **[6]**

OR

**Q10)** Write short note on (Any Two): **[16]**

- a) Inertial sensors (MEMS).
- b) Micromachine pressure sensors.
- c) Microscale Vacuum Pumps.

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