PSELT304.2 - SEC2-Paper-IV : Mechatronics

P. Pages : 2

Time : Three Hours

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GUG/S/23/11259

Max. Marks : 80

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Notes : 1. All questions are compulsory and carry equal marks.
2. Draw well labelled diagrams wherever necessary.
3. Use of calculator is allowed.

Either:

1. a) What is mechatronics system? Differentiate between traditional and mechatronics design. **8**

b) What is LVDT? Explain construction and working of LVDT. Draw its characteristics. **8**

OR

c) Describe static and dynamic characteristics of transducers. **8**

d) What is control system? Explain the need of control system with suitable example. **8**

Either:

2. a) Explain unit and ramp response of first order. **8**

b) Describe: **8**

i) Natural and forced response

ii) Transient and steady state response

OR

c) Describe the basic model for an electrical system. **8**

d) Describe the rotational system with basic building block. **8**

Either:

3. a) Discuss the system with negative feedback. **8**

b) What is Bode Plot? Explain with suitable examples. **8**

OR

c) What is transfer function? Explain the transfer function of R – C series circuit. **8**

d) Differentiate between a system with negative and positive feedback. **8**

Either:

4. a) Draw the block diagram of digital control system and explain. **8**

b) Describe steady state error. How can it be minimized? **8**

OR

c) Describe PD and PI controllers with suitable diagram. **8**

d) State and explain various control modes used in controllers. **8**

5. a) Explain optical encoders in mechatronics. **4**

b) Describe the mathematical model of a system. **4**

c) Explain location of planes on s - plane. **4**

d) Explain self tuning control system. **4**

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