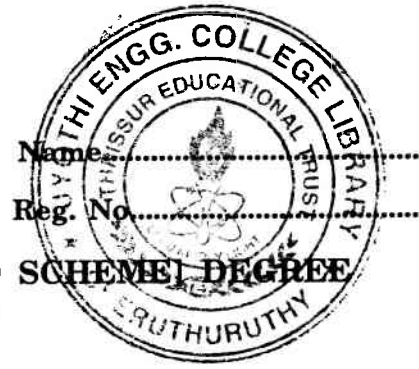


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**SIXTH SEMESTER B.TECH. (ENGINEERING) [09 SCHEME] DEGREE
EXAMINATION, APRIL 2016**

ME 09 L04—MECHATRONICS

Time : Three Hours

Maximum : 70 Marks

Part A

Answer all questions.

Each question carries 2 marks.

1. What are the advantages of hydraulic system over mechanical system ?
2. State some application of servo motor in mechatronic system.
3. List some electrical output devices in a mechatronic system.
4. List the advantages of mechatronics design over traditional design.
5. What is the important of Mathematical modelling in mechatronic ?

(5 × 2 = 10 marks)

Part B

Answer any four questions.

Each question carries 5 marks.

6. Briefly explain the basic requirements of a sensor/transducer.
7. Describe the different methods for speed control of DC motor.
8. Describe the working of robotic wrist switch.
9. Write the advantages of PLC over microcomputer.
10. State the application and advantages of neural network system.
11. How to identify the stability of system ?

(4 × 5 = 20 marks)

Part C

Answer all questions.

Each question carries 10 marks.

12. (a) What is transducer ? Explain the working principle of different temperature transducers.

Or

- (b) Explain the servo mechanism. How it is used to detect the error ?

Turn over

13. (a) Explain the working of capacitive and inductive types of proximity sensors.

Or

- (b) Explain clearly about direct and indirect measurement systems with a suitable examples.

14. (a) (i) Discuss about analog-to-digital conversion process.

- (ii) What are the components used in A/D converter ?

Or

- (b) Discuss operation, limitations and applications of PID controller.

15. (a) Explain the mechatronics systems used in an automatic camera with a neat block diagram.

Or

- (b) Devise a circuit that could be used with a domestic washing machine to switch on a pump to pump water for 100 sec into the machine, then switch off the pump and switch on a heater for 50 sec to heat the water. The heater is then switched off and another pump is switched on for 100 sec to empty the water from the machine.

(4 × 10 = 40 marks)