

B. TECH.
THEORY EXAMINATION (SEM–VI) 2016-17
MECHATRONICS

Time : 3 Hours**Max. Marks : 100****Note : Be precise in your answer. In case of numerical problem assume data wherever not provided.**

SECTION – A

- 1. Attempt all parts of the following question: 10 x 2 = 20**
- (a) What do you understand by mechatronics?
 - (b) Differentiate between conventional and mechatronics system design.
 - (c) What are flip-flops?
 - (d) What is JIT?
 - (e) What do you mean by bionics?
 - (f) Define robotics and law of robotics.
 - (g) What is servomotor?
 - (h) What is automatic control system?
 - (i) Define the term smart sensors.
 - (j) What are motion control devices?

SECTION – B

- 2. Attempt any five of the following questions: 5 x 10 = 50**
- (a) Define passive electrical components. Also explain any two passive electrical components used in mechatronics.
 - (b) Explain programmable logic controller along with the ladder diagram.
 - (c) Explain the cam and follower with its different types.
 - (d) What is stepper motor or stepper servomotor? Write the advantages and disadvantages of stepper servomotor.
 - (e) Explain in detail the features of flexible manufacturing system.
 - (f) What are logic gates? Draw and explain the various logic gates used in digital electronics.
 - (g) Explain the term inversion of mechanism and different types of mechanisms used in mechatronics.
 - (h) Which parameters are used to define the performance of transducers?

SECTION – C

- Attempt any two of the following questions: 2 x 15 = 30**
- 3.** How can measured liquid level in a vessel? Explain different methods of liquid level measurement.
 - 4.** What is transfer function? How to determine transfer function? Write advantages disadvantages of transfer function.
 - 5.** Explain the working of a pick and place robot.