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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.