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APR-MAY

B. E. (Eighth Semester) Examination, 2020

(New Scheme)

(Mech., Production, Automobile Engg. Branch)

MECHATRONICS

Time Allowed : Three hours

Maximum Marks : 80

Minimum Pass Marks : 28

Note : Attempt all questions. Part (a) of each unit is compulsory. Attempt any two parts from (b), (c) and (d) of each question.

Unit-I

1. (a) Define mechatronics. 2
- (b) Explain the areas where mechatronics system can be used. 7

- (c) What are the various objectives, advantages and disadvantages of a mechatronics system? 7
- (d) Explain different types of motion control system used in NC machines. 7

Unit-II

- 2. (a) What is the basic principle of thermocouple? 2
- (b) Give an examples for a transducer and state its transduction principle. 7
- (c) Write a detailed notes on pressure measuring system. 7
- (d) What is Proximity Sensor? Explain the working of an eddy current proximity sensor. 7

Unit-III

- 3. (a) Name the components used in the hydraulic system. 2
- (b) Explain working of a 4/3 position direction control valve with sketch of its internal parts. 7
- (c) Explain construction and working of an external gear pump with its sketch. 7
- (d) Explain construction and working of a Fluid coupling. 7

Unit-IV

4. (a) Define control system. 2
- (b) Describe data acquisition system's basic input/output process with an example. 7
- (c) Describe analog to digital and digital to analog conversion. 7
- (d) Explain about transient response and frequency response. 7

Unit-V

5. (a) What do you understand by design of mechatronics system? 2
- (b) What are the different stages in designing a mechatronics system? 2
- (c) Discuss the possible design solutions for CNC lathe. 7
- (d) Design a mechatronics system for an electrode arm control in electric arc furnace. 7