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Code No: 135CK

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, November/December - 2018

INTRODUCTION TO MECHATRONICS

(Common to EEE, ECE)

Time: 3 hours

Max. Marks: 75

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

(25 Marks)

- 1.a) Define mechatronics. [2]
- b) Classify the filters and explain in brief. [3]
- c) Explain measuring systems in brief. [2]
- d) What is thermal dissipation? [3]
- e) Define solenoid. [2]
- f) State the applications of microcontrollers. [3]
- g) What is Programmable Logic Controllers? [2]
- h) List the applications of Programmable Logic Controllers. [3]
- i) Define control system. [2]
- j) Write about S curve. [3]

PART - B

(50 Marks)

- 2.a) Write about real time operating systems. [5]
- b) Explain about Digital Signal Processing with block diagram. [5]

OR

- 3.a) Explain about the application of mechatronics in automatic camera. [5]
- b) Describe analog to digital conversion process. [5]

- 4.a) Write about design aspects in machine structures. [5]
- b) Explain about motors Isolation schemes. [5]

OR

- 5.a) Describe about control software and operator interface used in precision mechanical systems. [5]
- b) Differentiate between Bipolar transistors and MOSFETS. [5]

- 6.a) Explain about DC servo motors. [5]
- b) Write an assembly language program for LED Blinking. [5]

OR

- 7.a) Explain about variable frequency drives and vector drives. [5]
- b) Draw the block diagram of microprocessor and explain. [5]

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- 8.a) Explain about timers and counters.
b) Describe about data handling.

[5+5]

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- 9.a) Write about ladder diagram.
b) Describe about internal relays.

[5+5]

- 10.a) Explain about Laplace transform and its application in analysing differential equation of a control system?

[5+5]

- b) Describe about P and PI controllers.

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- 11.a) Explain about velocity sensors.
b) Describe about multi axis interpolation.

[5+5]

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