Code No: 135CK **R16**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech III Year I Semester Examinations, October - 2020
INTRODUCTION TO MECHATRONICS
(Common to EEE, ECE)

Time: 2 hours **Max. Marks: 75**

Answer any five questions
All questions carry equal marks
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1. Explain in-detail about CAD/CAM database management system. How manipulation of data is possible. [15]

2.a) Sketch and explain a closed loop control system and highlight the basic elements in it.
b) How signal conditioning plays a vital role in filtering noise using passive components of machines/systems. [7+8]

3.a) Distinguish between electrical and pneumatic actuators. Also list-out their limitations.
b) What are the various motions and mechanisms existing in mechanical systems? Draw suitable sketches. [7+8]

4.a) Describe the feature of analog and digital sensors for motion measurement? Also give a note on digital transducers.
b) Explain the following
i) Thermal Dissipation
ii) CMOS interfacing. [7+8]

5.a) Discuss in detail the specification of a stepper motor. List out its applications in mechanical systems.
b) Explain the basic form of the permanent magnet stepper motor and its speed- torque characteristics. [7+8]

6.a) Explain with block diagram a microprocessor based digital control system of an automatic door operation.
b) What are the applications of micro controllers? Give their advantages and limitations also. [7+8]

7. With the help of a block diagram, explain the main components of a Programmable Logic Controller. [15]

8. A motor is used to rotate a load. Device a mathematical model and draw the mechanical model and equivalent model for the same. [15]

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