

22225

**M.Tech. 1st Semester Mechanical Engg. Machine
Design Examination, December-2017
MECHATRONICS AND PRODUCT DESIGN
Paper-M-809-A**

Time allowed : 3 hours]

[Maximum marks : 100

Note : Attempt any five questions.

1. Explain the working of inverting, non-inverting and summing amplifiers. What is RTD ? State its applications. 20
2. How the use of MATLAB and SIMULINK softwares are used in designing mechatronics product ? Explain with example. 20
3. What is Mechanical Actuation system ? What are the devices used in such system ? What are the two types of feedback loop ? 20
4. (a) Tactile sensor
(b) LVDT
(c) Filtering
(d) Relays
(e) Microcontrollers. 5×4=20
5. What is a strain gauge ? Explain with neat sketches, the wire wound, foil type and capacitive strain gauge. 20

22225-P-2-Q-8 (17)

[P.T.O.]

6. Explain the working of ball screws, solenoids, line actuators and controllers in CNC machines. Distinguish between position sensors and light sensors. 20
7. Explain briefly a mathematical model of a car moving on a road. What is difference between PLC and logic card? 20
8. (a) List down the type of Proximity sensor ; optical encoders. 20
(b) What are the key elements of Mechatronics system ? Explain with examples.

22225