

Roll No.

23054

**M. Tech 1st Semester (Mech.
Engg.) (Manufacturing &
Automation)**

Examination-May, 2015

Mechatronics and Product Design

Paper-833/M-605-A

Time : 3 hours

Max. Marks : 100

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

Note : Attempt any **five** questions.

1. Define Mechatronics. What are the key elements and components of Mechatronics system ? Explain with a block diagram and examples. [20]

2. Explain various types of amplifiers in detail.

[20]

3. Explain with neat and clean sketches various types of sensors.

[20]

4. Discuss in detail the various mechanical and other system building blocks.

[20]

5. Explain the following :

(a) Line actuators and controllers with applications.

[10]

(b) Electrical actuation system.

[10]

6. Derive the second order equation for rotational an Hydraulic Mechanical system.

[20]

7. Explain in detail stepper and servomotors ball screws and Solenoids.

[20]

8. Write notes on the following :

(a) Sequence logic flip-flop system. [10]

(b) Pneumatic and hydraulic systems. [10]
