

Roll No



**PRESIDENCY UNIVERSITY
BENGALURU**

**SCHOOL OF ENGINEERING
MID TERM EXAMINATION - APR 2023**

Semester : Semester VI - 2020

Course Code : MEC3083

Course Name : Sem VI - MEC3083 - Mechatronics

Program : MEC

Date : 12-APR-2023

Time : 2PM - 3.30PM

Max Marks : 60

Weightage : 30%

Instructions:

- (i) Read all questions carefully and answer accordingly.
- (ii) Question paper consists of 3 parts.
- (iii) Scientific and non-programmable calculator are permitted.
- (iv) Do not write any information on the question paper other than Roll Number.

PART A

ANSWER ALL THE QUESTIONS

(5 X 2 = 10M)

1. What are the functions performed by Signal Conditioner?
(CO1) [Knowledge]
2. Automatic control of water(liquid) level (with only mechanical linkage(s)) is a Closed loop system or Open Loop System and why?
(CO1) [Knowledge]
3. What is a combined systems?
(CO1) [Knowledge]
4. In an electro-mechanical system, the conversion of energy is _____ to _____.
(CO2) [Knowledge]
5. What is a Load Cell ?
(CO2) [Knowledge]

PART B

ANSWER ALL THE QUESTIONS

(3 X 10 = 30M)

6. Explain the role of microcontrollers in mechatronics, and discuss their applications, advantages, and limitations.
(CO1) [Comprehension]

7. Explain the design process of a mechatronic system, and discuss the various factors that need to be considered during the design phase.
(CO1) [Comprehension]
8. NASA had sent perseverance rover on the mars in 2020. For suppose, we have to design a rover of such type for ISRO, which type of control system (Open loop or Closed loop) do you prefer to use and why. Explain the control system you choose in detail.
(CO2) [Comprehension]

PART C

ANSWER THE FOLLOWING QUESTION

(1 X 20 = 20M)

9. i. Explain the construction of Bourdon pressure gauge with primary and secondary transducers.
ii. Explain the differences between sensors and transducers.
(CO2,CO1) [Application]