

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2019****Subject Code: 2153406****Date: 03/06/2019****Subject Name: Mechatronics****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

	Marks
Q.1 (a) Explain Tempering process for heat treatment of metal.	03
(b) What is electroplating? How does the electroplating process work?	04
(c) Explain Mechatronics design process.	07
Q.2 (a) Describe Potentiometer Displacement Sensor	03
(b) Write a short note on Thermocouple.	04
(c) Explain working of LVDT with neat sketch.	07
OR	
(c) Explain briefly the construction and working of strain gauge with application.	07
Q.3 (a) Explain bimetallic strips	03
(b) Explain belt & chain drive with figure.	04
(c) Explain c type bourdon gauge.	07
OR	
Q.3 (a) Explain gears with figure.	03
(b) Explain Derivative controllers.	04
(c) Explain solid state switching device with application.	07
Q.4 (a) Explain solenoid with neat sketch.	03
(b) Compare the hydraulic and pneumatic systems.	04
(c) Explain with circuit diagram, speed control of D.C shunt, series and compound motor by flux reduction method.	07
OR	
Q.4 (a) Explain basic laws of robotics.	03
(b) Describe the operation and construction of Variable displacement Vane pump with neat sketch.	04
(c) What is a load cell? Explain briefly the construction and working of strain gauge load cell.	07
Q.5 (a) List types of Robot Configuration. Explain any one with neat sketch.	03
(b) Explain Automatic Car Parking System as Mechatronics System.	04
(c) Explain Basic PLC structure in details with figure.	07
OR	
Q.5 (a) Explain Digital Counter with suitable application	03
(b) Explain data handling in PLC.	04
(c) Explain PID controller.	07
