Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3171112 Date: 30/06/2023

Subject Name: Automotive Electronics

Time: 10:30 AM TO 01:00 PM Total Marks: 70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Define..Torque, Power and Engine Overall Efficiency	**03**
	(b)	Explain Effect of Spark Timing on Performance	**04**
	(c)	Explain electronics systems used in automobile at different places.	**07**
Q.2	**(a)**	Explain following sensor 1. Knock 2. ECT 3. Air Bag Sensor	**03**
	(b)	Write short note on Evolution of automotive electronics.	**04**
	(c)	Explain the different strokes for Four stroke SI Engine, with suitable diagram?	**07**
		OR	
	(c)	What are the seven mode of fuel control? Explain with neat diagram digital engine control system.	**07**
Q.3	**(a)**	Explain. Engine Mapping in detail	**03**
	(b)	Why there is need of Electronics in automobile?	**04**
	(c)	What are the Digital Engine control. Explain in detail.	**07**
		OR	
Q.3	**(a)**	Explain strain gauge MAP sensor in detail.	**03**
	(b)	Explain Electronic steering control.	**04**
	(c)	Explain Electronics Suspension system in detail.	**07**
Q.4	**(a)**	Explain Electric motor actuators used in automobile.	**03**
	(b)	Explain CAN protocol in detail.	**04**
	(c)	Explain Electrical circuits and wiring in vehicles in detail.	**07**
		OR	
Q.4	**(a)**	Explain Airflow rate sensor in detail.	**03**
	(b)	Explain Antilock braking system.	**04**
	(c)	Discuss Hardware Implementation Issues in detail.	**07**
Q.5	**(a)**	Explain Electro-Pneumatic actuators used in detail.	**03**
	(b)	Explain Digital Cruise Control in detail.	**04**
	(c)	Explain Angular Position Sensor, Hall effect Position Sensor, Optical Crankshaft Position Sensor in detail.	**07**
		OR	
Q.5	**(a)**	Explain following sensor 1. MAP 2. EGO 3. TAS	**03**
	(b)	Explain working of Exhaust gas oxygen sensor.	**04**
	(c)	Explain Battery types and maintenance in detail.	**07**