

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2021****Subject Code:3171112****Date:27/12/2021****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) Why there is need of Electronics in automobile?	03
(b) What is sensor? List the sensor used in automobile.	04
(c) Explain the different strokes for Four stroke SI Engine, with suitable diagram?	07
Q.2 (a) Outline the desire function of catalytic converter.	03
(b) What are the major controller inputs and outputs from/to Engine? Show their connection between Engine and Controller.	04
(c) What are the seven mode of fuel control? Explain with neat diagram digital engine control system.	07
OR	
(c) Explain the working of Fuel Injector and pulse mode fuel control signal with relevant diagrams and waveforms.	07
Q.3 (a) Define Engine performance term Power, BSFC, torque with their relevant formula and their units.	03
(b) Explain the effect of air fuel ratio on performance.	04
(c) Explain Idle speed control with relevant diagram	07
OR	
Q.3 (a) What is sparkplug? Why it is required in automotive vehicle?	03
(b) With neat block diagram explain EGR Control.	04
(c) With neat diagram explain electronic ignition control system.	07
Q.4 (a) Explain following sensor	03
1. Knock 2. ECT 3. Air Bag Sensor	
(b) Explain EGR actuator control with a relevant diagram	04
(c) With relevant diagram Explain digital Speed sensor.	07
OR	
Q.4 (a) Explain following sensor	03
1. MAP 2. EGO 3. TAS	
(b) Explain stepper motor actuator with neat diagram	04
(c) What is hall effect? Explain Position sensor using principal of hall effect. Compare with magnetic reluctance sensor.	07
Q.5 (a) List the communication buses used in vehicle network	03
(b) Explain Accelerometer based Air bag system with relevant diagrams	04
(c) Explain CAN protocol in detail.	07
OR	
Q.5 (a) Explain Antilock Braking System with relevant diagrams.	03
(b) Explain low tire-pressure warning system with relevant diagrams	04
(c) Draw & Explain block diagram of battery operated electric vehicles.	07
