

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022****Subject Code:3170216****Date:12-01-2023****Subject Name:Electric, Hybrid and Fuel Cell Vehicles****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 are Electric Vehicles called Green Vehicles?	03
	(b) Write Advantage of Electric Vehicle.	04
	(c) Explain the wiring layout of vehicle.	07
Q.2	(a) Explain history of electric, hybrid and fuel cell vehicles.	03
	(b) Explain working of BLDC motor.	04
	(c) Explain various hybrid drive-train topologies.	07
	OR	
	(c) Explain safety measures for storage of Hydrogen.	07
Q.3	(a) Explain working of Highspeed Flywheel.	03
	(b) What are the battery parameters to be considered?	04
	(c) Explain Battery based energy storage and its analysis.	07
	OR	
Q.3	(a) Explain working of power steering .	03
	(b) Working of ultra-capacitor in short.	04
	(c) Explain working of Lead Acid Battery.	07
Q.4	(a) Explain working of Battery Level Indicator.	03
	(b) Explain alkaline fuel cell.	04
	(c) Explain working of Hydrogen powered vehicle.	07
	OR	
Q.4	(a) What is latest Vehicle Communication technique used in today's vehicle?	03
	(b) Explain phosphoric acid fuel cell.	04
	(c) Explain types of Fuel Cell used as power source for vehicle.	07
Q.5	(a) List types of Motor used for vehicle propulsion.	03
	(b) Explain Sizing the propulsion motor.	04
	(c) Why is CAN Bus used in vehicles?	07
	OR	
Q.5	(a) What is Vehicle Architecture?	03
	(b) Explain regenerative braking system	04
	(c) Explain energy management strategies used in hybrid vehicles.	07