

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code: 3170216****Date:01-06-2024****Subject Name: Electric, Hybrid and Fuel Cell Vehicles****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.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) What is the environmental importance of electric vehicle?	03
	(b) Short note- Electric traction.	04
	(c) Explain wiring diagram of passenger car.	07
Q.2	(a) Explain history of electric, hybrid and fuel cell vehicle.	03
	(b) Short note- Electric Hybrid traction	04
	(c) Explain different electric drive train topology with diagram.	07
	OR	
	(c) What is the battery parameters and explain any one battery measurement with neat sketch.	07
Q.3	(a) Enlist types of fuel cell.	03
	(b) Explain working of high speed flywheel.	04
	(c) Explain battery based energy storage and its requirements.	07
	OR	
Q.3	(a) Describe the control of permanent magnet motor.	03
	(b) Explain working of ultra capacitor.	04
	(c) Explain configuration and control of BLDC motor drives.	07
Q.4	(a) What is the advantage of series motor?	03
	(b) Explain proton exchange membrane fuel cell.	04
	(c) Explain hydrogen storage system.	07
	OR	
Q.4	(a) Enlist types of motor used in EV.	03
	(b) Explain regenerative braking system.	04
	(c) Explain lead acid battery with neat sketch.	07
Q.5	(a) Advantage of electric and hybrid vehicle.	03
	(b) Explain regenerative braking system.	04
	(c) Short note- EV auxiliaries.	07
	OR	
Q.5	(a) Explain power steering unit.	03
	(b) Explain CAN BUS?	04
	(c) Explain energy management strategies used in electric and hybrid vehicle.	07
