

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3170216

Date: 19/06/2023

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) Enlist types of fuel cells.	03
(b) Describe Hydrogen storage system.	04
(c) Explain regenerative braking system with neat sketch.	07
Q.2 (a) Explain Battery characteristics.	03
(b) Comparison of different energy management strategies.	04
(c) Explain power flow control in electric drive-train topologies with neat sketch.	07
OR	
(c) Explain alkaline fuel cell and proton exchange membrane fuel cell with neat sketch	07
Q.3 (a) Why Electric Vehicles are called Green Vehicles?	03
(b) Working of ultra-capacitor in short.	04
(c) Why is CAN Bus used in vehicles?	07
OR	
Q.3 (a) Give short history of electric vehicle.	03
(b) Describe the control of permanent magnet motor.	04
(c) Explain control of DC motor.	07
Q.4 (a) Explain Sizing the propulsion motor.	03
(b) Short note : Regenerative braking systems	04
(c) Explain the wiring layout of vehicle.	07
OR	
Q.4 (a) Explain working of High speed Flywheel.	03
(b) Explain phosphoric acid fuel cell.	04
(c) Explain temperature control unit in lithium batteries.	07
Q.5 (a) What is Vehicle Architecture?	03
(b) Explain Configuration and control of BLDC Motor drives.	04
(c) Explain various hybrid drive-train topologies.	07

OR

- Q.5** (a) What is latest Vehicle Communication technique used in today's vehicle? **03**
- (b) Basic concept of Electric traction. **04**
- (c) What is the Battery parameters and also explain any one battery measurement with neat sketch. **07**
