

GUJARAT TECHNOLOGICAL UNIVERSITY
ME - SEMESTER IV (NEW) – EXAMINATION – SUMMER - 2017

Subject Code: 2744503**Date: 03/05/2017****Subject Name: Electric Vehicles****Time: 02:30 PM - 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.

- Q.1** (a) Discuss typical variable speed traction electric motor characteristic. **07**
(b) Explain Low-speed (below the base speed) and High speed (above the base speed) operation of SRM with necessary waveform. **07**
- Q.2** (a) With block diagram explain conceptual illustration of general EV configuration. **07**
(b) Discuss configuration of series hybrid electric drive train. **07**
- OR**
- (b) Discuss configuration of parallel hybrid electric drive train. **07**
- Q.3** (a) Explain functional block diagram of Electric propulsion systems. **07**
(b) Explain forward motoring and regenerative braking control with a single chopper. **07**
- OR**
- Q.3** (a) Give the classification of electric motor drives for EV and HEV application. **07**
(b) Explain general configuration of constant V/f control for induction motor drive. **07**
- Q.4** (a) Explain illustration of the Max. SOC-of-PPS control strategy for series hybrid electric drive train. **07**
(b) With block diagram explain overall control scheme for parallel hybrid drive train. **07**
- OR**
- Q.4** (a) Explain power and energy capacity of PPS for series hybrid electric drive train. **07**
(b) Draw and explain flowchart of Max. SOC-of-PPS control strategy for parallel hybrid drive train. **07**
- Q.5** (a) With diagram explain principle and construction of PEMFC. **07**
(b) Explain high-frequency transformer based isolated charger topology. **07**
- OR**
- Q.5** (a) Explain design of Z-converter for battery charging **07**
(b) Write a short note on super capacitor. **07**
