

Time: 3 Hours

Marks: 80

Note :

- **Question No.1 is compulsory.**
- Solve **ANY THREE** questions from the **remaining** questions.
- Figure to the right indicates full marks.

		Marks
Q.1	Solve ANY FOUR questions from following. (Each question carries 5 marks)	20
	a) Explain the basic movements in vehicle driving.	
	b) Explain the AC and DC characteristics of motors used in EV/HEV.	
	c) Give the importance of ultracapacitors in EV/ HEV	
	d) Explain the AC and DC chargers used for EV/HEV.	
	e) Calculate the capacity of a battery drawing 42 Ah current at 10 hr time rate. the Peukert coefficient is 1.107.	
Q.2	a) Explain the series architecture with neat diagram. Also explain the power flow stages.	10
	b) Explain why hybridization of energy sources is important for EV/HEV.	10
Q.3	a) Explain the power characteristics of ICE?	10
	b) Explain the working of Fuel cell with neat diagram.	10
Q4.	a) Derive the expression of power output for the series motor?	10
	b) Explain with neat diagram V2G concept? Also mention the advantages and disadvantages.	10
Q5.	a) Classify Energy Management Strategies. Explain Rule based energy management strategies.	10
	b) Explain the working of SRM motor used in EV/HEV.	10
Q6.	a) Compare the fuel efficiency of series and parallel drive.	10
	b) Explain working of converters. Draw and explain two quadrant DC-DC choppers.	10
