

TIME:3Hrs

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 basic components used in movement of the ICE.	
	b) Compare different energy sources used in EV.	
	c) Importance of lithium ion batteries used in Electric vehicle.	
	d) Explain the general block diagram of Electric vehicle.	
	e) Differentiate between series and parallel architect.	
Q. 2	a) Draw and Explain Parallel drive architecture ? Also draw and explain the power flow stages used in the drive.	10
	b) Explain why hybridization of energy sources is important for EV/HEV.	10
Q.3	a) Explain the different forces acting on vehicle movement ?	10
	b) Explain the importance of fuel cell with a neat diagram in EV.	10
Q4.	a) Explain the design parameters considered for series hybrid drive.	10
	b) Explain with neat diagram G2V concept? Also mention the advantages and disadvantages.	10
Q5.	a) Classify Energy Management Strategies. Give the importance of each.	10
	b) Name the motors used in EHEV. Explain the parameter of the AC and DC motors used in EV/HEV	10
Q6.	a) Define the key battery parameters (i) Battery capacity (ii) C rating (iii) SoC (iv) DoD (v) Specific Energy	10
	b) Explain working of converters. Draw and explain two quadrant DC-DC choppers.	10
