Sem IV (C-Scheme KTCELEC) Winter 2025 12/12/25

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 flywheels used in EV/ HEV	
	d)	Explain Rule based energy management strategy.	
	e)	Give the drawbacks of the batteries used in EV/HEV	
Q. 2	a)	Explain the series-parallel architecture with neat diagram. Also explain the power flow stages at each stage.	10
	b)	Explain why hybridization of energy sources is important for EV/HEV.	10
Q.3	a)	Explain the power characteristics of ICE and motors used in EV/HEV ?	10
	b)	Explain the working of ulteracapacitors with neat diagram. Compare it with other energy sources used in EV/HEV	10
Q4.	a)	(i)Derive the expression of power output for the series motor ?	05
		(ii) Define SOC, DOD, Specific energy of battery. Calculate peukart capacity of lead acid battery discharge time of 20 hours having current carrying capacity 5A (k = 1.5)	05
	b)	Explain with neat diagram V2G concept? Also mention the advantages and disadvantages.	10
Q5.	a)	Classify the DC and AC chargers used in EV and HEV as per the standard rating. Draw a neat diagram and give applications of the vehicles.	10
	b)	Explain the working of SRM motor used in EV/HEV.	10
Q6.	a)	Explain the fuel efficiency of anyone drive train in EV/HEV.	10
	b)	Explain working of converters. Draw and explain two quadrant DC-DC choppers.	10