F **Reg. No. :** | | | | | | | | | | |

Question Paper Code: 99372

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2022

Open elective

Civil Engineering

19UEE972– ELECTRIC AND HYBRID VEHICLES

(Common to CSE, ECE, Mechanical, IT, Chemical, Agri & BME engineering branches)

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5x 20 = 100 Marks)

1.	(a)	Explain the electric hybrid vehicles with a neat sketch and discuss function of major electrical components involved in it.	CO1- U	(20)
		Or		
	(b)	Draw the layout diagram of conventional and electric hybrid vehicles and explain the function of each component.	CO1- U	(20)
2.	(a)	Explain the state of charge and state of discharge of battery parameters for an electric vehicle.	CO2- U	(20)
		Or		
	(b)	Explain the types of battery used in an EV application.	CO2- U	(20)
3.	(a)	Write a short notes on PMSM.	CO3- U	(20)
		Or		
	(b)	Write a short notes on SRM.	CO3- U	(20)
4.	(a)	Explain the given power train components with neat sketch.		
		(i) Electric vehicle power train.	CO4- U	(10)
		(ii) Manual and Automatic transmission.	CO4- U	(10)
		Or		
	(b)	Sketch and Explain the Gear Mechanism component of Electric Vehicle Drive Train with suitable diagrams	CO4- App	(20)

5.	(a)	Analyze the function series, parallel, and series-parallel architectures of Hybrid electric vehicle power train.	CO5-	Ana	(20)
		Or			
	(b)	Analyze the given power train sizing components for Hybrid electric vehicles (i) Maximum velocity (ii) Maximum Gradability.	CO5-	Ana	(20)