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

Question Paper Code: 59372

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Open elective

Civil Engineering

15UEE972– ELECTRIC AND HYBRID VEHICLES

(Common to CSE, ECE, EIE, Mechanical, IT, Chemical)

(Regulation 2015)

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)	Make use of road way position vector and develop tangent co-ordinate system and compare the same with fixed co-ordinate system .	CO1- U	(20)
2.	(a)	Explain the charging and discharging for lead acid battery with chemical reaction equation.	CO2- U	(20)
		Or		
	(b)	Draw and explain the performance characteristics of battery.	CO2- U	(20)
3.	(a)	Write a short notes (i) PMSM (ii) SRM	CO3- U	(20)
		Or		
	(b)	Explain the transition from motoring to generating action using a four quadrant drive and how the regenerative braking is achieved.	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)	Draw and explain the characteristics of Tractive Force versus vehicle speed for four speed transmission	CO4- U	(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 Initial acceleration of power train component sizing f Hybrid electric vehicles.	CO5- Ana	(20)