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

Question Paper Code: 59372

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

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)	Examine three main sources of Hybrid Electric Vehicles and compare the transmission path in a conventional Internal Combustion Engine with a Hybrid Electric Vehicle also describe in detail about the components of HEV.	CO1- E	(20)
		Or		
	(b)	Explain the electric hybrid vehicles with a neat sketch and discuss function of major electrical components involved in it.	CO1- App	(20)
2.	(a)	Explain the charging and discharging for lead acid battery with chemical reaction equation.	CO2- Ana	(20)
		Or		
	(b)	Draw and explain the battery cell structure with its components	CO2- U	(20)
3.	(a)	Analyze the Speed –Torque characteristics, and and Torque production of switched reluctance motor.	CO3- Ana	(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)	Sketch and explain the suitable braking method, with speed torque characteristics in which the source can absorb the electrical energy	CO4- U	(20)
		Or		
	(b)	Explain the given power train components with neat sketch. (i) Electric vehicle power train (ii) Manual and Automatic transmission	CO4- U	(20)
5.	(a)	Sketch and explain the 2*2 vehicle architecture of series-parallel hybrid vehicle, where IC engine is coupled to the front wheel	CO5- U	(20)
		Or		
	(b)	Explain about the hybrid vehicle architecture, in which only one energy converter can provide propulsion power to the wheels	CO5-U	(20)