

**PRAGATI ENGINEERING COLLEGE: SURAMPALEM
(AUTONOMOUS)**

III B.Tech II Semester Regular/Supplementary Examinations, April - 2024

**FUNDAMENTALS OF ELECTRIC VEHICLES
(Civil Engineering)**

Time: 3 hours

Max. Marks: 70 M

**Answer ONE Question from each Unit
All Questions Carry Equal Marks**

Q. No.	Questions	BTL	CO	Marks
UNIT – I				
K1.	a) Explain the different components of Conventional Vehicles	K2	CO1	7M
	b) Explain the different types of Electric Vehicles.	K1	CO1	7M
OR				
2.	a) Compare Conventional Vehicles and Electric Vehicles.	K3	CO1	7M
	b) Describe the Electric vehicles with their advantages and applications	K2	CO1	7M
UNIT – II				
3.	a) Draw the block diagram of the Electric Vehicles and explain operation of each block	K3	CO2	7M
	b) Draw the circuit diagram of PWM Inverter and operation	K2	CO2	7M
OR				
4.	a) Briefly Explain the electrical traction motors how suitable to EV.	K2	CO2	7M
	b) Draw the circuit diagram of the Bidirectional DC-DC Converter.	K3	CO2	7 M
UNIT – III				
5.	a) What are the advantages of hybrid electrical vehicles and Applications of Hybrid Electric vehicles	K2	CO3	7M
	b) How to extended the range of Hybrid Electric Vehicles And list out the Merits and Demerits.	K2	CO3	7M
OR				
6.	a) Explain about series and parallel complex Hybrid Electric Vehicles and list out advantages of parallel & complex hybrid electric vehicles over series electric vehicles	K2	CO3	7M
	b) Draw a neat sketch of HEV Architecture and explain.	K3	CO3	7M
UNIT – IV				
7.	a) What are the different motors are suitable for Hybrid Electrical Vehicles.	K2	CO4	7M
	b) Explain the construction of Permanent Magnet Synchronous motor.	K2	CO4	7M
OR				
8.	a) Explain the construction of Switched Reluctance motor.	K2	CO4	7M
	b) What are the necessary requirements of electrical machines	K2	CO4	7M

		needed for Electrical Hybrid Vehicles.			
UNIT – V					
9.	a)	Define Battery? and necessity of Batteries management for E.V	K2	CO5	7M
	b)	Draw the neat circuit diagram of the of Fuel Cell and its operation	K3	CO5	7M
OR					
10.	a)	Explain the Working of Lead acid battery and their advantages	K2	CO5	7M
	b)	Compare the Working principle operation of Ultra capacitors & Flywheels	K3	CO5	7M