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PRESIDENCY UNIVERSITY

BENGALURU

Mid - Term Examinations – October 2025

Date: 10-10-2025

Time: 02.00pm to 03.30pm

School: SOE	Program: B.Tech-EEE (COMMON TO ALL)	
Course Code : EEE3103	Course Name: Electric Vehicles and Battery Technology	
Semester: III/V/VII	Max Marks: 50	Weightage: 25%

CO - Levels	CO1	CO2	CO3	CO4	CO5
Marks	26	24	-	-	-

Instructions:

- (i) *Read all questions carefully and answer accordingly.*
- (ii) *Do not write anything on the question paper other than roll number.*

Part A

Answer ALL the Questions. Each question carries 2 marks.

5Q x 2M=10M

1	Apply your knowledge of EV history to explain why electric vehicles are regaining popularity today.	2 Marks	L3	CO1
2	Classify the common motor configurations in EVs and show where each can be applied.	2 Marks	L3	CO1
3	Apply the concept of tractive effort to explain its role in vehicle acceleration.	2 Marks	L3	CO1
4	Apply your understanding of hybrid architectures to suggest which type (series or parallel) is more suitable for city driving and explain why.	2 Marks	L3	CO2
5	Illustrate how power flows in a series hybrid drivetrain during vehicle operation.	2 Marks	L3	CO2

Part B

Answer the Questions.**Total Marks 40M**

6.	a.	Illustrate the general configuration of an electric vehicle with a neat block diagram and explain the role of each subsystem.	10 Marks	L3	CO1
	b.	Illustrate the torque-speed and power-speed characteristics of a typical variable-speed electric motor and apply them to explain their significance in electric vehicle operation.	10 Marks	L3	CO1

Or

7.	a.	Illustrate the tractive effort versus vehicle speed characteristics of a traction motor with a neat sketch and apply it to explain the operating regions of an electric vehicle.	10 Marks	L3	CO1
	b.	Illustrate how tractive effort is applied to overcome rolling resistance, aerodynamic drag, and gradient resistance during normal driving of an electric vehicle.	10 Marks	L3	CO1

8.	a.	Illustrate the general classifications of hybrid electric vehicles with a neat diagram and apply them to explain their role in improving vehicle performance.	10 Marks	L3	CO2
	b.	Illustrate the configuration of a series hybrid electric drivetrain with a neat block diagram and apply it to explain the function of each component.	10 Marks	L3	CO2

Or

9.	a.	Illustrate the configuration of a parallel hybrid electric drivetrain with mechanical coupling using a neat diagram, and apply it to explain the role of each subsystem in power flow.	10 Marks	L3	CO2
	b.	Illustrate a parallel hybrid electric drivetrain with torque coupling using a neat diagram, and explain the power flow through the system in various operating modes.	10 Marks	L3	CO2