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School of Engineering

B.TECH Mechanical Engineering in E-Vehicles and Autonomous Vehicles
Mid Term Examination - May 2024

Duration : 90 Minutes
Max Marks : 50

Sem VI - G3UC603B - EV drive and Control

General Instructions

Answer to the specific question asked

Draw neat, labelled diagrams wherever necessary

Approved data hand books are allowed subject to verification by the Invigilator

- 1) What is the principle of step-up operation in power converters? K2 (2)
- 2) Describe the functionality of a buck converter with an RLE load. K1 (3)
- 3) Provide examples and applications of two-quadrant converters. K2 (4)
- 4) Explain the operation and advantages of parallel hybrid configurations in vehicles, emphasizing how they utilize both internal combustion engines and electric motors for propulsion. K2 (6)
- 5) Describe the historical development of electric vehicles from the 19th century to modern times, highlighting key advancements in battery technology and their impact on EV viability. K3 (6)
- 6) Compare and contrast the characteristics of AC and DC circuit breakers used in electric vehicles, discussing their respective advantages and limitations. K3 (9)
- 7) Explain the concept of zero emissions vehicles (ZEVs) and compare the environmental benefits of electric vehicles versus traditional gasoline-powered vehicles. K4 (8)
- 8) Analyze the role of series hybrids in extending the range of electric vehicles, discussing their unique features such as the absence of a mechanical connection between the engine and wheels. K4 (12)

OR

Critically evaluate different types of electric motors commonly used in EVs, considering factors such as efficiency, power output, and suitability for various driving conditions. K4 (12)