PAPER ID-410075

Subject Code: KOE090

Roll No: | | | | | | | | | | | | | |

BTECH
(SEM VIII) THEORY EXAMINATION 2023-24
ELECTRIC VEHICLES

TIME: 3 HRS **M.MARKS: 100**

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 10 = 20**

Q no.	Question
a.	Define rolling resistance.
b.	Write the advantage of EV.
c.	Write the classification of electric vehicle.
d.	What is SRM in electric vehicle?
e.	What is a 2nd life lithium battery?
f.	What do you mean by Smart battery pack?
g.	Mention the charging methods of battery
h.	What is onboard charger.
i.	What is the role of aggregator in V2G?
j.	What is scheduling energy?

SECTION B

2. Attempt any *three* of the following: **10x3=30**

a.	Discuss the evaluation of EVs in details.
b.	What is an Axial flux motor and also explain its working principle?
c.	What are factors affecting the performance of batteries used in EVs?
d.	What are different modes of charging batteries? Compare them in detail.
e.	Elaborate energy management system and issues of energy management strategies of EHV.

SECTION C

3. Attempt any *one* part of the following: **10x1=10**

a.	Compare IC engine and electric vehicle with their merits and demerits.
b.	Draw a general lay out of an EV and discuss the transmission characteristics

4. Attempt any *one* part of the following: **10x1=10**

a.	Explain the sizing the power electronics to hybrid vehicle.
b.	Discuss the Classification of EV motors. Also explain the torque speed characteristics of SRM.

5. Attempt any *one* part of the following: **10x1=10**

a.	Explain the lithium-based batteries
b.	What is Battery Management System? Explain its Working & Functions.

6. Attempt any *one* part of the following: **10x1=10**

a.	Explain different charging algorithm and discharging method for battery pack.
b.	What is the OCPP protocol and how does it work?

7. Attempt any *one* part of the following: **10x1=10**

a.	Discuss the application of AI in EV. What is the role of artificial intelligence in the future of EV?
b.	Why an energy management control system is required in an HEV? Do you think an elaborate energy management system similar to that applied to a hybrid vehicle, is required in an electric vehicle? Explain.