**TED (21)6031D**
**(Revision – 2021)**

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**Reg. No……**
**Signature…….**

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2025**

# ELECTRIC VEHICLES

[Maximum Marks: **75**] [Time: **3** Hours]

## PART-A

**I. Answer '*all*' the following questions in one word or one sentence. Each question carries *'one'* mark.**

**(9 x 1 = 9 Marks)**

| | | Module Outcome | Cognitive level |
|---|---|---|---|
| 1. | ..... work like batteries, but they do not need recharging. | M1.02 | U |
| 2. | FAME 2 is introduced in..... year. | M1.03 | R |
| 3. | ..... hybrid vehicle is either propelled by ICE or Battery. | M2.03 | R |
| 4. | List any two benefits of hybrid cars. | M2.03 | R |
| 5. | .....is the measurement of current in which a battery is charged and discharged at. | M3.02 | U |
| 6. | .....…is a combination of cells connected in parallel and series. | M3.01 | U |
| 7. | .....charging is a type of wireless power transfer. | M3.04 | R |
| 8. | ..... is a systematic approach to solving a problem or faults. | M4.04 | R |
| 9. | List one fault will occur in electric motor. | M4.04 | R |

## PART-B

**II. Answer any '*eight*' questions from the following. Each question carries *'three'* marks.**

**(8 x 3 = 24 Marks)**

| | | Module Outcome | Cognitive level |
|---|---|---|---|
| 1. | List the different types of EVs. | M1.04 | R |
| 2. | Explain FAME 1 in detail. | M1.03 | U |
| 3. | List the main components of EV subsystem. | M2.01 | R |
| 4. | Explain in wheel drive in EV. | M2.02 | U |
| 5. | List the different battery parameters. | M3.01 | R |
| 6. | Explain battery swapping in detail. | M3.02 | U |
| 7. | List the different charging protocols in the world. | M3.04 | R |
| 8. | Define V2V technology. | M4.02 | R |
| 9. | Explain about battery recycling. | M4.03 | U |
| 10. | List the probable faults will occur in EV battery. | M4.04 | R |

## PART-C

**Answer '*all*' questions from the following. Each question carries '*seven*' marks.**

**(6 x 7 = 42 Marks)**

| | | Module Outcome | Cognitive level |
|---|---|---|---|
| III. | Discuss in detail the difference between complete EV and Hybrid vehicles. | M1.02 | U |
| | **OR** | | |
| IV. | Explain the working of Permanent Magnet DC Motors with neat sketch. | M1.04 | U |
| V. | Describe the power flow in series hybrid with neat sketch. | M2.03 | U |
| | **OR** | | |
| VI. | Explain regenerative braking system, its advantages and disadvantages. | M2.04 | U |
| VII. | Classify types of batteries and its applications in detail. | M3.02 | U |
| | **OR** | | |
| VIII. | Discuss Battery Management System (BMS) and its function in EV. | M3.02 | U |
| IX. | Explain various types of battery charging techniques | M3.02 | U |
| | **OR** | | |
| X. | Identify the components and requirements for EV charging stations. | M3.04 | U |
| XI. | Describe V2H and V2G technologies in detail. | M4.01 | U |
| | **OR** | | |
| XII. | Explain about different faults occur in EVs and its rectifying methods. | M4.04 | U |
| XIII. | Discuss about renewable energy based charging stations in detail. | M4.04 | U |
| | **OR** | | |
| XIV. | Explain the impact of EV charging on electricity distribution system in Kerala if there is increase in EV in future. | M4.02 | U |

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