**18EED32**

**Hall Ticket Number:**

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| **IV/IV B.Tech (Regular) DEGREE EXAMINATION** | | | |
| **December, 2021** | **Electrical & Electronics Engineering** | | |
| **Seventh Semester** | **ELECTRICAL AND HYBRID VEHICLES** | | |
| **Time:** Three Hours | | **Maximum:** 50 Marks | |
| *Answer Question No.1 compulsorily.* | | | (10X1 = 10 Marks) |
| *Answer ONE question from each unit.* | | | (4X10=40 Marks) |
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| 1. | a) | List the various parts of electric vehicles. | CO1 | L1 |
|  | b) | When was the first electrical vehicle built? | CO1 | L1 |
|  | c) | Define Hybridization ratio. | CO1 | L1 |
|  | d) | Compare single gear vs multiple gear transmission systems. | CO2 | L2 |
|  | e) | List out various hybrid drive-train topologies. | CO2 | L1 |
|  | f) | Explain about fuel efficiency. | CO2 | L2 |
|  | g) | What are the different types of Induction motor? | CO3 | L1 |
|  | h) | Classify different types of electric propulsion systems. | CO3 | L2 |
|  | i) | What is BMS? | CO4 | L1 |
|  | j) | Identify two requirements for Energy Storage in Electric Vehicles. | CO4 | L3 |
| **Unit -I** | | | | |
| 2. |  | Explain about the social and environmental aspects of electric vehicles. | CO1, L2 | 10M |
| **(OR)** | | | | |
| 3. |  | Derive an equation for tractive effort in electric vehicle dynamics. | CO1, L3 | 10M |
| **Unit -II** | | | | |
| 4. |  | Explain about different architectures of hybrid drive train with help of neat diagrams. | CO2, L2 | 10M |
| **(OR)** | | | | |
| 5. |  | Explain in detail about power flow control in electric drive-train topologies. | CO2, L2 | 10M |
| **Unit -III** | | | | |
| 6. |  | What is the configuration and control of Switch Reluctance Motor drives. | CO3, L1 | 10M |
| **(OR)** | | | | |
| 7. |  | Explain about the various electric components used in electric vehicles. | CO3, L2 | 10M |
| **Unit -IV** | | | | |
| 8. |  | Find What is Hybridization of different energy storage devices. | CO4, L1 | 10M |
| **(OR)** | | | | |
| 9. |  | Explain the different energy management strategies. | CO4, L2 | 10M |

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