Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

**Supplementary Examination – June – 2017**

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| **Code :** | **14EE2024** | **Duration :** | **3hrs** |
| **Sub. Name :** | **BASICS OF ELECTRIC AND HYBRID VEHICLE** | **Max. marks :** | **100** |

**ANSWER ALL QUESTIONS (5 x 20 = 100 Marks)**

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| Q. No. | Sub Div. | Questions | Course  Outcome | Marks |
| 1. | a. | Describe the basic techniques for improving Engine Performance,Efficiency,and Emissions. | CO1 | 15 |
| b. | Compare and contrast conventional vehicles with electric vehicles. | CO1 | 5 |
| (OR) | | | | |
| 2. | a. | Outline the history of electric and hybrid electric vehicles. | CO1 | 15 |
| b. | Write the significance of regenerative braking. | CO1 | 5 |
| 3. | a. | Describe the working of a hydrogen fuel cell electric vehicle. | CO1 | 15 |
|  | b. | List some applications of electric vehicle. | CO1 | 5 |
| (OR) | | | | |
| 4. | a. | Explain the working of battery electric vehicle. | CO1 | 15 |
|  | b. | Write the significance of photovoltaic cells in a solar vehicle. | CO1 | 5 |
| 5. | a. | With the help of a neat bock diagram, explain the working of Parallel hybrid vehicle in detail.Mention its advantages and limitations. | CO1 | 15 |
|  | b. | Briefly, explain the function of a controller in an electric vehicle. | CO1 | 5 |
| (OR) | | | | |
| 6. | a. | With the help of a neat bock diagram, explain the working of series hybrid vehicle in detail.Mention its advantages and limitations. | CO1 | 15 |
|  | b. | Illustrate the concept of series plug-in hybrid vehicle. | CO1 | 5 |
| 7. | a. | Discuss the constructional features, principle of operation of a BLDC motor. | CO2 | 10 |
|  | b. | Compare and Contrast brushed motor and brushless motor. | CO2 | 10 |
| (OR) | | | | |
| 8. | a. | Classify the 3 phase induction motor based on rotor construction and explain in detail. | CO2 | 10 |
|  | b. | Explain any one method to control the dc motors using choppers. | CO2 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Discuss the constructional features, theory of operation of a lead acid battery. | CO3 | 15 |
|  | b. | Briefly explain the characteristics of super capacitors. | CO3 | 5 |

ALL THE BEST