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



**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

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

**End Semester Examination – April/May– 2017**

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| **Code :** | **14EI2018** | **Duration :** | **3hrs** |
| **Sub. Name :** | **AUTOMOTIVE INSTRUMENTATION** | **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. | With help of a neat block diagram elaborate on the requirements of the starting system. | CO1 | 12 |
| b. | List and define the electrical laws pertaining to automobile. | CO1 | 8 |
| (OR) | | | | |
| 2. | a. | Describe the operation of an alternator with reference to a rotating ‘permanent magnet’, also Make a clearly labelled sketch to show a typical external alternator circuit used for charging. | CO2 | 14 |
| b. | State the three methods in which the baterries are rated. | CO1 | 6 |
| 3. | a. | List and explain the various control technique used to improve the performance of the car. | CO1 | 10 |
|  | b. | Explain the working of PI controller in Advance safety systems. | CO1 | 10 |
| (OR) | | | | |
| 4. | a. | What is cruise control? Explain how it is implemented in cars. | CO2 | 12 |
|  | b. | How is the air to fuel ratio maintained in cars? | CO2 | 8 |
| 5. | a. | What is a catalytic convertor? Explain the necessity of it in a car. | CO2 | 6 |
|  | b. | With help of a block diagram explain how Automatic transmission is achieved in automobiles. | CO2 | 14 |
| (OR) | | | | |
| 6. | a. | What are the main functions of active suspension system? Elaborate on how these functions are able to achieve the active suspension. | CO2 | 14 |
|  | b. | Explain the requirements of the Antilock Braking System. | CO1 | 6 |
| 7. | a. | Draw the block diagram of computer based instrumentation system and explain all the blocks in detail. | CO2 | 20 |
| (OR) | | | | |
| 8. | a. | With help of neat diagrams, elaborate the operation and working of the airbag system along with the components used. | CO2 | 14 |
|  | b. | Describe the construction and working of automatic seat adjustment. | CO2 | 6 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Explain the message structure of KWP Protocol. | CO3 | 10 |
|  | b. | Explain the communication cycle of the FlexRay Protocol with the required diagrams. | CO3 | 10 |

ALL THE BEST