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 :** | **14EE2036** | **Duration :** | **3hrs** |
| **Sub. Name :** | **SMART GRID** | **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. | What are the technologies required for the smart grid? Brief about each technology. | CO1 | 16 |
| b. | Illustrate various communication technologies used in smart grid. | CO1 | 4 |
| (OR) | | | | |
| 2. | a. | Describe the various Smart Grid Communication Technologies and their benefits and drawbacks. | CO2 | 16 |
| b. | Compare Traditional grid and smart grid. | CO1 | 4 |
| 3. | a. | Propose the possible solution to cyber security attacks in smart grid communication. | CO2 | 16 |
|  | b. | What are the different levels of attacks in smart grid communication? | CO2 | 4 |
| (OR) | | | | |
| 4. |  | Illustrate about the following (i) Modbus IEC 61850 (ii) IEEE 802 series communication protocol (iii) Power Line Communication. | CO2 | 20 |
| 5. | a. | Draw the architecture of WAMS and illustrate its functional block | CO1 | 16 |
|  | b. | Brief about Phasor Measurement Unit (PMU). | CO3 | 4 |
| (OR) | | | | |
| 6. | a. | How to deploy AMI in smart grid network. | CO1 | 16 |
|  | b. | List out the standard measures included in the cyber security. | CO2 | 4 |
| 7. | a. | Draw the functional block diagram of smart meter and brief about various blocks. | CO1 | 16 |
|  | b. | Differentiate between AMR and AMI. | CO1 | 4 |
| (OR) | | | | |
| 8. | a. | Discuss about the functions of SCADA and its challenges and threats in power system network. | CO3 | 16 |
|  | b. | What are the important factors for assessment of smart metering communication protocols? | CO2 | 4 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Brief about Super conducting magnetic energy storage system. | CO3 | 14 |
|  | b. | How the electrical energy is stored in an electrostatic field? Explain with relevant diagram. | CO3 | 6 |