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

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**End Semester Examination – Nov/Dec – 2018**

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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. | In order to reap the expected benefits from the smart grid, list the best practices in the deployment of smart grid technology. | CO1 | 10 |
| b. | Give an over view of the technology required for smart grid implementation. | CO1 | 10 |
| (OR) | | | | |
| 2. | a. | Differentiate between traditional grid and smart grid. | CO1 | 10 |
| b. | Illustrate the barriers and solutions to smart grid development. | CO1 | 10 |
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| 3. | a. | Draw the architute of Modbus protocol stack and compare any two Modbus implementation. | CO2 | 10 |
| b. | What are the components involved in cryptography and explain about any two encryption method used in smart grid communication. | CO2 | 10 |
| (OR) | | | | |
| 4. | a. | List the steps involved in RSA Encryption-Decryption algorithm. Consider that user A wishes to transmit the character ‘G’ to user B. Demonstrate the process of Encryption and Decryption using RSA algorithm. | CO2 | 10 |
| b. | Review the mitigation techniques used in cyber security system and also mention the standards followed in the cyber security? | CO2 | 10 |
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| 5. | a. | Draw the configuration of the WAMPAC. Give examples of possible future WAMPAC schemes. | CO2 | 10 |
| b. | A service provider acts as a broker between the utility company and customers in a microgrid. Formulate energy consumption scheduling problem for this scenario. Suggest a suitable algorithm to solve this problem. | CO2 | 10 |
| (OR) | | | | |
| 6. | a. | Illustrate the role of DyLiacco Framework in EMS. | CO2 | 10 |
| b. | Describe different types of 3D visualization techniques used in TSO. | CO2 | 10 |
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| 7. | a. | Discuss the technical challenges involved in the Integration of Vehicles with Rechargeable Batteries into Distribution Networks. | CO3 | 10 |
| b. | Suggest power electronic converters for variable speed operation of wind, hydro and tidal stream turbines. | CO3 | 10 |
| (OR) | | | | |
| 8. | a. | Write the power-transfer equation. Show how FACTS devices act on this equation to enhance the power system operation. | CO3 | 10 |
| b. | Compare different energy storage technologies. List the applications of energy storage. | CO3 | 10 |
|  | | **Compulsory**: |  |  |
| 9. | a. | Draw the Functional block diagram of a smart meter. Mention the roll of each block. Which block differentiates smart meter and an electronic meter?. | CO2 | 10 |
| b. | Draw the structure of a typical DMS. Write brief notes on load forecasting tool in DMS. | CO2 | 10 |