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

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**End Semester Examination – Nov / Dec – 2019**

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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 establishing the smart grid network and brief about each technology. | CO1 | 10 |
| b. | Compare Traditional grid and smart grid. | CO1 | 10 |
| **(OR)** | | | | |
| 2 | a. | List out the barriers for implementing the smart grid and also discuss about its solutions. | CO1 | 10 |
| b. | Discuss the benefits of implementing smart grid concepts into the traditional grid. | CO1 | 10 |
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| 3. | a. | Write short notes on:  (i) Encryption (ii) Authentication (iii) Digital Signature | CO2 | 18 |
| b. | What are the different levels of attacks in smart grid communication? | CO2 | 02 |
| **(OR)** | | | | |
| 4. |  | Draw the data structure used for the communication within substations as recommended by IEC 61850. Also, list the functions which ensure the interoperability of substation equipments. | CO2 | 20 |
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| 5. | a. | Draw the functional block diagram of smart meter and brief about various blocks. | CO1 | 10 |
| b. | 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 |
| **(OR)** | | | | |
| 6. | a. | Write brief notes on the following smart metor sensors.  i) Rogowski Coil ii) Hall effect sensor iii) Fiber optic current sensor. | CO1 | 10 |
| b. | Define Demand Side Integration (DSI). Explain four important strategies to modify the load consumption patterns. Also, discuss few pricing schemes. | CO1 | 10 |
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| 7. | a | Define Distributed Management System (DMS). Draw and describe the Structure and main components of DMS. | CO2 | 10 |
| b | Write short notes on the following:  i) Topology Analysis ii) Load Forecasting (iii) Stateestimation. | CO2 | 10 |
| **(OR)** | | | | |
| 8. | a. | Draw the configuration of Energy Management Systems(EMS) and list its various functions. | CO2 | 10 |
| b. | Discuss about the functions of SCADA and its challenges and threats in power system network. | CO2 | 10 |
|  | | **Compulsory:** |  |  |
| 9. | a. | Brief about Super conducting magnetic energy storage system. | CO3 | 10 |
| b. | List out the penetration issues associated with renewable energy technology. | CO3 | 5 |
| c. | Illustrate about Shunt and series compensation in distribution Network. | CO3 | 5 |