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6E6075

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B.Tech. VI Semester (Main & Back) Examination, April/May-2017
Electrical & Electronics Engg.
6EX6.1A Smart Grid Technology
EE,EX

6EES A

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 26**Instructions to Candidates:**

Attempt any **five questions**, selecting **one question** from **each unit**. All Questions carry **equal marks**. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitable be assumed and stated clearly). Units of quantities used/calculated must be stated clearly.

Unit-I

1. a) Define smart grid. Differentiate between conventional grid and smart grid.
b) Explain the concept of Resilient and self-healing grid.

OR

1. a) Describe the opportunities and challenges relate to smart grid.
b) What are the major points which are the forced drivers for demanding smart grid?

Unit-II

2. a) What is smart substation? Explain the classification of smart substation.
b) Explain Energy management system in detail.

OR

2. a) Explain the principle and operation of phase shifting transformer.
b) Describe volt/VAR control in smart grid.

Unit-III

3. a) Explain how smart meter can be play an important role to make a system smart.
b) What are the protocols and benefits of Advanced Metering Infrastructure (AMI)?

OR

3. a) What is phasor measurement unit? Explain its features and applications of PMU in power system.
- b) Give the brief description of Intelligent Electronic Devices (IED).

Unit-IV

4. a) Describe the power quality issues of grid connected renewable energy resources.
- b) Explain ElectroMagnetic Compatibility (EMC). What is the importance of voltage quality to achieve EMC?

OR

4. a) Illustrate power quality monitoring concept and also explain monitoring considerations.
- b) Explain the concept of power quality conditioners related to smart grid.

Unit-V

5. a) Explain in detail about the cyber security for smart grid.
- b) Describe IP based protocols.

OR

5. Write a short note on :
 - a) Cloud computing
 - b) LAN and WAN

