6E6075

Roll No. _____ Total No of Pages: 3

6E6075

B. Tech. VI-Sem. (Main/Back) Exam., April/May-2016

Electrical Engineering

6EE5A Smart Grid Technology

Common with EX, EE

Time: 3 Hours **Maximum Marks: 80**

Min. Passing Marks (Main & Back): 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 may suitably be assumed and stated clearly.*

Units of quantities used/ calculated must be stated clearly.

Use of following supporting material is permitted during examination. (Mentioned in form No. 205)

1. NIL 2. NIL

UNIT-I

Q.1 (a) Describe the desirable features and characteristics of an ideal smart grid. [8]

(b) What are major points which are forced drivers for demanding smart grid? [8]

OR

Q.1 (a) What are resilient and self – healing grid? Describe principle of self – healing grid and its need in smart grid networks. [3+5=8]

(b) What are major global smart grid initiatives in India? What are the prominent international policies in smart grid presently? [3+5=8]

UNIT-II

Q.2 (a) Explain the ideal design and the mechanism of smart energy system. [10]

(b) Describe the driving elements of substation automation and functions of substation automation system. [6]

OR

Q.2 (a) Explain the outage management system principles and integration requirements. [10]

(b) How a phase shifting transformer is used to control the real power flow on three – phase electricity transmission network. [6]

UNIT-III

Q.3 (a) Give an overview of advanced metering infrastructure and its integration with home automation. [10]

(b) Explain protocols and benefits of advanced metering infrastructure. [6]

OR

Q.3 (a) Explain fundamentals of phasor measurement unit and their applications in power system. [10]

(b) What are the functions of intelligent electronic devices as smart grid components? [6]

UNIT-IV

Q.4 (a) Describe the significance of electromagnetic compatibility in power system with smart grid. [10]

(b) Describe & explain the power quality issues of grid connected renewable energy resources. [6]

OR

Q.4 (a) Explain power quality conditioners principle and control circuit. [10]

(b) Illustrate power quality monitoring concept and explain monitoring considerations. [6]

UNIT-V

Q.5 Explain following network architecture types in smart grid communication entities:

(a) Local Area Network [6]

(b) Wide Area Network [10]

OR

Q.5 (a) Describe the various layers of Internet protocol layers. [6]

(b) Explain service modules types provided in cloud computing and role of cloud computing in smart grid. [10]
