Code:19EE4602C

III B.Tech - II Semester – Regular Examinations – JUNE 2022

SMART GRIDS
(ELECTRICAL AND ELECTRONICS ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
2. Part-A contains 5 short answer questions. Each Question carries 2 Marks.
3. Part-B contains 5 essay questions with an internal choice from each unit. Each question carries 12 marks.
4. All parts of Question paper must be answered in one place.

PART – A

1. a) What is Grid resiliency?
   b) List the five characteristics of smart grid communications technology.
   c) What is congestion management effect?
   d) Define Dynamic Stability in smart grids.
   e) What are the drawbacks of Dynamic Programming techniques?

PART – B
UNIT – I

2. a) High light on evolution of Electric Grid and the Concept of Smart Grid.   6 M
   b) Write a note on opportunity and barriers in Smart Grid.   6 M

OR

3. a) Highlight on need and functions of Smart Grid Components.   6 M
   b) Compare Micro-Grid and Smart-Grid.   6 M

UNIT – II

4. a) Write a short note on the following terms
        i)   WAMS
        ii) PMU   6 M
    b) Compare the conventional metering and smart
        metering.   6 M

<div align="center">OR</div>

5. a) What are the benefits of smart meters?   4 M
    b) Describe the functional block diagram of a smart meter
        architecture.   8 M

UNIT-III

6. a) What are the challenges to load flow in smart grid?   6 M
    b) Explain any one method from Distribution Load Flows.   6 M

<div align="center">OR</div>

7. a) Explain with neat flowchart of the load flow used in
        distributed networks.   7 M
    b) Explain about performance indices.   5 M

UNIT – IV

8. a) What are the strengths and weaknesses of existing
        voltage stability analysis tools?   6 M
    b) Explain the Concept of VIPI in the node specification
        space.   6 M

<div align="center">OR</div>

9. a) What do you understand about voltage stability
        indexing?   6 M
    b) What is Direct Methods for Detecting Voltage Collapse
        Points and what are the disadvantages of it?   6 M

UNIT – V

10. a) What are the different computational tools that are used in smart grids, and what is the importance of these? 6 M

b) Explain the decision support tools with Analytical Hierarchical Programming. 6 M

OR

11. a) Explain in detail about the Integer Programming in optimization techniques. 6 M

b) Discuss about linear programming in optimization techniques. 6 M