CBCS SCHEME

USN | | | | | | | | | |

15EE831

Eighth Semester B.E. Degree Examination, June/July 2019
Smart Grid

Time: 3 hrs. Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Explain what you understand by "Smart Grid". Compare Today's grid with smart grid. **(08 Marks)**

b. What are the attributes that can be a basis for a definition of smart grid? **(08 Marks)**

OR

2 a. Write short notes on the following terms:
i) WAMS
ii) PMU
iii) Smart meters
iv) Smart appliances. **(08 Marks)**

b. Explain the security type performance indices for ranking the severity of various contingencies. **(08 Marks)**

Module-2

3 a. Explain voltage stability and voltage collapse. **(08 Marks)**

b. What are the different classifications of voltage stability? **(08 Marks)**

OR

4 a. Explain different methods of "Angle stability assessment". **(08 Marks)**

b. Explain the attributes desirable in the development of state estimate for smart grids. **(08 Marks)**

Module-3

5 a. Write a note on computational tools used for smart grid design. What are the important questions that has to be addressed by the computational tools and techniques. **(08 Marks)**

b. What are the computational challenges associated with using advanced tools for Smart Grid control. **(08 Marks)**

OR

6 a. Write a note on general level of automation required for an effective operation of Smart Grid. **(08 Marks)**

b. Explain Bulk power systems automation of smart grid at transmission level. **(08 Marks)**

Module-4

7 a. Describe electric vehicle and plug-in-hybrids. **(08 Marks)**

b. i) Explain fuel cells operation. What are the efficiencies attainable?
ii) Explain the principle of "Geo thermal heat pumps". **(08 Marks)**

OR

8 a. What is interoperability? What is the state of the art in the interoperability in smart grid components? **(08 Marks)**

b. What are the cyber security risks in each phase of project life cycle of smart grids? **(08 Marks)**

Module-5

9 a. What are the technological expertise required by professionals of smart grid operation and control? **(08 Marks)**

b. What are the research areas that can strengthen smart grids? **(08 Marks)**

OR

10 a. Explain with a sketch, a sample microgrid test bed-environment. Which includes renewable energy sources? **(08 Marks)**

b. Explain the following terms:

i) Demand response

ii) Peak and time of use-pricing. **(08 Marks)**

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