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**M.Tech.**  
**(SEM III) ODD SEMESTER THEORY EXAMINATION, 2015-16**

**SMART GRID**

*Time: 3 Hours*

*Maximum Marks: 100*

**Note:** *Attempt all questions.*

**Q.1.** *Attempt any TWO parts of the following.* **10x2=20**

- a) How does a smart grid differ from conventional grid?
- b) Describe in brief about the smart grid attributes.
- c) What are the major challenges in implementation of smart grids in India?

**Q.2.** *Attempt any FOUR parts of the following.* **5x4=20**

- a) What is real time pricing? What is AMR?
- b) Write in detail about outage management system.
- c) Write a notes on Plug in hybrid electric vehicle.
- d) Briefly describe Substation Automation.
- e) How is advance communication technology integrated in operation of smart grids?
- f) What do you understand by building automation?

**Q.3.** *Attempt any TWO parts of the following.* **10x2=20**

- a) How do neighborhood smart grid operate?
- b) Write a note on Zig-Bee.
- c) Discuss about broad band over power lines.

**Q.4.** *Attempt any FOUR parts of the following.* **5x4=20**

- a) Discuss about fault detection and isolation techniques.
- b) What roles do high frequency and phase shiting transformers have in smart grids.
- c) What is the need of having of microgrids? Discuss about its formation.
- d) How is a microgrid protected?
- e) Describe the control techniques used in microgrids.
- f) Wrie about co-generation and captive power generation.

**Q.5.** *Attempt any TWO parts of the following.* **10x2=20**

- a) Enumerate and describe briefly the various electrical storage devices.
- b) What are challenges in performing load flow analysis of smart grids?
- c) Discuss about voltage stability and angle stability.