Roll No. ☐☐☐☐☐☐☐☐☐☐☐   **Total No. of Pages : 02**

Total No. of Questions : 08

M.Tech. (EE)(2018 Batch) (Sem.–2)
SMART GRIDS
Subject Code : MTEE-203D-18
M.Code : 76105

Time : 3 Hrs.   **Max. Marks : 60**

INSTRUCTIONS TO CANDIDATES :
1.Attempt any FIVE questions out of EIGHT questions.
2.Each question carries TWELVE marks.

1. a) Describe the desirable features and characteristics of an ideal smart grid. What are major points which are forced drivers for demanding smart grid?

    b) What are resilient and self - healing grid? Describe principle of self - healing grid and its need in smart grid networks.

2. a) What are major global smart grid initiatives in India? What are the prominent international policies in smart grid presently?

    b) Describe the driving elements of substation automation and functions of substation automation system.

3. a) Explain the outage management system principles and integration requirements.

    b) What are the PHEVs and V2G technology? What are the different advantages and disadvantages of these technology in existing power system?

4. Write a short note on the following (any **THREE**) :

    a) Wide area measurement system

    b) Need of GIS in smart grid system

    c) Storage system and their role in smart grid environment.

    d) Phase measurement unit

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5. a) What is a Fuel cell? Explain working principle with a suitable diagram of any Fuel cell.

    b) What is a micro-grid? What are the different protection and control mechanism used in microgrid?

6. a) What are the captive power plants? Explain with the help of a suitable example.

    b) What are the different generators used in wind energy systems? Describe the role of different converters in renewable power conversion system.

7. a) What is power quality? What are the different power qualities issues associated with the grid integrated renewable energy sources?

    b) What is power quality monitoring? Describe briefly the various power quality conditioners used in smart grid environment.

8. a) Explain following network architecture types in smart grid communication entities :

    i)   Local Area Network

    ii) Wide Area Network

    iii) Wi-Max based communication.

    b) Describe the various layers of Internet protocol layers. Explain service modules types provided in cloud computing and role of cloud computing in smart grid

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.