

CBGS SCHEME

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18EE744

Seventh Semester B.E. Degree Examination, July/August 2022

Smart Grid

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the attributes of the smart grid. (10 Marks)
b. What do you mean by device-level power system? Explain the advantages of the perfect device-level power system. (10 Marks)

OR

- 2 a. With a suitable diagram, explain the building integrated power system. Also list the advantages. (10 Marks)
b. Write short notes on the following:
(i) Low-carbon generation (ii) Local Energy Networks (10 Marks)

Module-2

- 3 a. Explain the five functionalities in the power system of today which is addressed by intelligrid. (10 Marks)
b. List out the benefits and drivers of DC power delivery system. Explain them briefly. (10 Marks)

OR

- 4 a. Explain the role of data centers and information technology loads in DC power delivery system. (10 Marks)
b. Explain the barriers to achieve the smartgrid vision based intelligrid architecture. (10 Marks)

Module-3

- 5 a. Explain the following components used in dynamic energy management:
(i) Smart energy efficient end-use devices
(ii) Advanced whole-building control systems (10 Marks)
b. Explain the role of technology in demand response. (10 Marks)

OR

- 6 a. Explain the following terms:
(i) Distributed energy resources
(ii) Energy management (10 Marks)
b. What are the key features of dynamic energy management system? Explain them briefly. (10 Marks)

Module-4

- 7 a. Write short notes on:
(i) Domestic water heating technologies
(ii) LED street and area lighting (10 Marks)
b. Explain the role of cogeneration and thermal energy storage in industrial energy management programs. (10 Marks)

OR

- 8 a. List out the common retrofit and replacement opportunities for motors and drives. Briefly explain the same. (10 Marks)
- b. What are the electrotechnologies used in residential, commercial and industrial sectors to save energy? Explain them briefly. (10 Marks)

Module-5

- 9 a. Explain the issues critical to demand side planning. (10 Marks)
- b. With a neat diagram, explain the levels of evaluation in demand-side planning. (10 Marks)

OR

- 10 a. Explain the concept of cost/benefit analysis in demand-side evaluation. (10 Marks)
- b. List out the operational objectives that can be addressed by demand-side alternatives. Explain them briefly. (10 Marks)

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