

CBCS SCHEME

18EE733

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Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024 Integration of Distributed Generation

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. List out various energy sources used in the distributed generation system and also list out the properties of Solar power. (10 Marks)
- b. Discuss the following aspects with respect to solar power generation :
- (i) Space requirements (10 Marks)
- (ii) Photovoltaics. (10 Marks)

OR

- 2 a. Briefly explain the different MPPT algorithm incorporate within solar power and current voltage characteristics of PV cell. (10 Marks)
- b. Briefly explain options for space heating aspects of combined heat and power generation and properties of small hydro large hydro power plants. (10 Marks)

Module-2

- 3 a. Explain with a neat diagram, the method of direct machine coupling with the grid and partial power electronics coupling to the grid. (10 Marks)
- b. Discuss about primary and secondary aims of the power system and also list out various types of power quality issues in power system. (10 Marks)

OR

- 4 a. Define hosting capacity and discuss hosting capacity approaches in distributed generation. (10 Marks)
- b. Explain impact of distributed generation and meshed operation in overloading and losses. (10 Marks)

Module-3

- 5 a. List out the possible solution to increase the hosting capacity for distributed generation and explain any one solution. (10 Marks)
- b. Define over voltage margin and explain hosting capacity approach for over voltage. (10 Marks)

OR

- 6 a. With an example, explain two stage boosting concerned to voltage variations and write the general expression for two stage boosting. (10 Marks)
- b. Discuss the need for probabilistic methods for design of distribution feeder and write the probability density and distribution function. (10 Marks)

Module-4

- 7 a. Discuss power quality disturbances in distributed generation and explain how these impact on distributed generation. (10 Marks)
b. Explain how the hosting capacity can be increased by allowing higher voltages. (10 Marks)

OR

- 8 a. Define voltage flicker and explain fast voltage fluctuation in wind power and solar power. (10 Marks)
b. Explain the voltage balance in weaker transmission system and stronger distribution system. (10 Marks)

Module-5

- 9 a. Explain the generation of low frequency harmonics due to induction generator used in wind power generation. (10 Marks)
b. Explain the parallel and series resonance concerned to harmonics. (10 Marks)

OR

- 10 a. Explain about the balanced and unbalanced voltage dips in synchronous machines. (10 Marks)
b. Explain how to increase the hosting capacity by passive harmonic filter and power electronic converter. (10 Marks)

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