G 1068 (Pages : 2) Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014

Eighth Semester

EE 01 805 G06 – DISTRIBUTED POWER SYSTEMS (Elective IV) [EE]

(New Scheme–2010 Admissions)

[Regular]

Time : Three Hours Maximum : 100 Marks

Part A

Answer **all** *questions.*

Each question carries 3 *marks.*

1. Draw the equivalent circuit of a PY cell. Explain the physics involved behind photovoltaic generation.
2. Give a brief description on the various braking mechanisms used in a wind turbine.
3. Briefly explain about the problems related to a wind-diesel hybrid system.
4. Explain about tide formation and briefly mention the methods for harnessing tidal energy.
5. Briefly explain the various power quality issues related to distributed power systems.

(5 × 3 = 15 marks)

Part B

Answer **all** *questions.*

Each question carries 5 *marks.*

6. What is Aerodynamic power coefficient? Explain its significance.
7. With a block diagram, explain how a wind energy system and solar energy systems can be integrated.
8. Give a brief description about different types of faults occurring in power systems.
9. With a neat diagram, explain Flash Steam Geothermal Power Plants.
10. Draw the V–I characteristics of a solar cell and explain.

(5 × 5 = 25 marks)

Turn over

Part C

Answer **all** *questions.*

Each question carries 12 *marks.*

1. Explain the working of a Proton Exchange Membrane Fuel Cell with a neat diagram and related equations.

Or

2. (a) With a neat diagram. explain the battery regulator circuit.

   (b) What is solar cell efficiency? What are the factors affecting the solar cell efficiency?

3. Derive an equation for the power generated in a wind turbine.

Or

4. Explain the factors involved in designing and operating of a wind farm.

5. (a) What is the difference between fixed speed and variable speed wind turbines?

   (b) Obtain the equivalent circuit of a permanent magnet generator.

Or

6. (a) Explain the significance of rectifying the wind turbine output voltage before integrating to the grid.

   (b) Briefly explain the classification of wind turbines.

7. What is Gasification process? With a neat diagram, explain a gasifier plant.

Or

8. Explain about various types of OTEC systems.

9. What is Islanding? What are the various islanding detection methods?

Or

10. How are DGs' integrated with low voltage networks? What are the integration issues?

(5 × 12 = 60 marks)