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Total No. of Printed Pages: 1

Total No. of Questions: [09]

B. Tech (EE) (Semester – 6th)
WIND & SOLAR ENERGY SYSTEMS
Subject Code: BELED1621
Paper ID: 18111535

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It consists of 10 parts of two marks each.
2. Section B consist of 5 questions of 5 marks each. The student has to attempt any 4 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(2 marks each)

Q1. Attempt the following:

- a) What is solar power?
- b) Explain the uses of solar PV module?
- c) Explain applications of MPPT.
- d) What is a wind farm?
- e) What is meant by pitch angle in wind turbine system?
- f) What is the maximum efficiency of a wind turbine?.
- g) What are the criteria for site selection of a windmill?
- h) Define Angle of attack in wind system.
- i) Define the term 'Stall'.
- j) How induction generator works?

Section – B

(5 marks each)

- Q2. Classify the solar cells. Derive an expression for maximum power output and efficiency of solar cells.
- Q3. Explain Hybrid and Isolated operation of Solar PV and wind system.
- Q4. Explain working of doubly fed induction generator in wind generator topologies.
- Q5. Find the tip-speed ratio if a 6 m diameter rotor has rotation of 20 rpm and the wind speed is 4 m/s. What is the implication of tip speed ratio?
- Q6. What is Grid Code? Explain its technical requirements.

Section – C

(10 marks each)

- Q7. a) Explain fixed and variable speed wind turbine.
b) What are the major factors that have led to the acceleration and development of the wind power?
- Q8. a) What are the features of the solar PV programme in India?
b) What are the advantages and disadvantages of PV system over conventional power system?
- Q9. Write a technical notes on:
a) Parabolic Trough
b) Fresnel