Roll No. | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

M.Tech. (Power System) (2018 Onwards) (Sem.–1)

WIND AND SOLAR SYSTEMS

Subject Code : MTPS-103D-18

M.Code : 75785

Time : 3 Hrs. Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWELVE marks.

Q1. a. Give a brief history of wind turbines. Explain screened windmills and clapper windmills.

b. Prove that in case of horizontal axis wind turbine, maximum power is proportional to the cube of the speed of the wind.

Q2. a. Describe with a neat sketch, the working of a wind energy system (WECS) with main components.

b. Explain the difference between horizontal and vertical axis wind turbines.

Q3. Explain the following :

a. Aerodynamic noise

b. Cup type windmills

c. Swept area

d. Lift force

Q4. a. Describe the different schemes of wind electric generation. Also, discuss generator control schemes.

b. How reactive power and voltage can be controlled in the case of WECS? Explain.

Q5. a. Write a short note on :

a) Darrious rotor

b) Wind energy storage

b. What are the different impacts of integrating wind and solar on dynamics of power system?

Q6. a. Define solar constant. Explain the terms "Beam" and "Diffusion Radiation'' related to solar radiation.

b. How solar air collectors are classified? What are the main applications of a drier?

Q7. a. Describe hot water supply system. In addition, explain agricultural and industrial applications of solar energy.

b. How heat is extracted from solar pond? Explain in detail electromagnetic energy storage system.

Q8. a. Why orientation is needed in concentration type collector? Describe the different methods of sun tracking.

b. Describe the working of-solar furnace. What are the main applications in which we can use it?

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