

Roll No.

Total No. of Pages : 02

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**B.Tech. (Civil Engineering/Computer Science & Engineering/Electronics
& Communication Engineering) / (Civil Engg.) (PIT) (Sem.-6)**

WIND AND SOLAR ENERGY SYSTEMS

Subject Code : OEE-203-18

M.Code. : 79324

Date of Examination : 19-07-22

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTIONS TO CANDIDATES :

1. SECTION-A is COMPULSORY consisting of TEN questions carrying TWO marks each.
2. SECTION-B contains FIVE questions carrying FIVE marks each and students have to attempt any FOUR questions.
3. SECTION-C contains THREE questions carrying TEN marks each and students have to attempt any TWO questions.

SECTION-A

1. Write briefly :

- a) What do you know about stall and pitch control?
- b) Which type of power electronics converters are used in wind generation?
- c) Draw the characteristics of permanent magnet synchronous generator.
- d) What is solar day length?
- e) How Earth Sun angles are different from observer Sun angles?
- f) How amorphous is different from monocrystalline solar photovoltaic technology?
- g) Draw V-I characteristics of PV cell.
- h) What is solar pond?
- i) What are the differences between parabolic trough and parabolic dish?
- j) How Betz limit is evaluated?

SECTION-B

2. With the help of neat sketches, discuss wind speed statistics. Discuss probability distribution related to wind power.
3. What are doubly fed induction generators? What is their role in the field of wind power generation? Draw characteristics of doubly fed induction generators.
4. Write note on generator-converter configurations.
5. What is wind physics? Give a broad view on Indian and global statistics related to wind power.
6. What are different modern wind turbine technologies? What are fixed and variable speed wind turbines?

SECTION-C

7. What is solar radiation spectra? How solar energy availability is estimated?
8. Draw equivalent circuit of a PV cell. What is PV module? How PV array is different from PV module. Draw and discuss V-I characteristics of a PV cell.
9. Write a note on :
 - a) Solar thermal power generation.
 - b) Power electronic converters for solar systems.

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