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Paper Id **221209** **Roll No.** | | | | | | | | | | |

M. TECH.
(SEM-II) THEORY EXAMINATION 2018-19
NON CONVENTIONAL ENERGY SOURCES & ENERGY CONVERTERS

Time: 3 Hours ***Total Marks: 70***

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2 x 7 = 14**

a. What are conventional sources of energy?
b. Define PV effect.
c. Define incident angle.
d. What is meant by pitch control?.
e. What are the advantages of wind power?.
f. Define wind penetration and its effect?
g. Define fuel cell?

SECTION B

2. Attempt any *three* of the following: **7 x 3 = 21**

a. Draw V-I Characteristics of a solar cell and explain briefly??
b. What are the advantages and disadvantages of concentrating collectors over flat plate collector?
c. Describe the electrical layout of a typical wind form by means of single line diagram. State the essential equipment.
d. What are solar inverter and converter and how does it work?
e. Write notes on: (i) Aerofoil (ii) Solar pond

SECTION C

3. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Write a note on the material used concentrating solar collectors.
(b) What is the principle of solar photovoltaic power generation? What are the main elements of a PV system?

4. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Define Solar Air Heater with neat sketch and also write its Application?
(b) Define Solar Air conditioning and Refrigeration System.

5. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Write Notes on (a) Methanol fuel Cell (b) Phosphoric acid fuel cell
(b) What is low temperature ion exchange membrane? Explain with help of neat sketch.

6. Attempt any *one* part of the following: **7 x 1 = 7**

(a) Why a tall tower is essential for mounting a horizontal axis wind turbine? Explain
(b) What are the most favorable sites for installing wind turbines? Define criteria.

7. Attempt any *one* part of the following: **7 x 1 = 7**

(a) What is polarization? List the different types of polarizations that occur in fuel cells. Show how does the electrode structure help in reducing the polarization?
(b) What do you mean by energy penetration? Is it economic and environmental friendly? Comment.

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