Printed Pages:02 **Sub Code:NOE-081**

Paper Id: | 1 | 9 | 9 | 8 | 0 | 1 | **Roll No.** | | | | | | | | | | |

B.Tech
(SEM. VIII) THEORY EXAMINATION 2017-18
NON CONVENTIONAL ENERGY RESOURCES

Time: 3 Hours ***Total Marks: 100***

Note: 1. Attempt all Sections. If require any missing data; then choose suitably.
2. Any special paper specific instruction.

SECTION A

1. Attempt *all* questions in brief. 2 x 10 = 20

a. What do you mean by non-conventional energy resources?
b. Highlight the merits and demerits of renewable forms of energy.
c. How tides are generated?
d. Discuss the primary and secondary energy sources.
e. Describe the advantages and dis-advantages of solar energy.
f. What is energy poverty? Name the five nations which consume the highest energy with suitable data.
g. Explain solar cell array and also write its limitations.
h. Discuss the limitations of solar photovoltaic energy conversion.
i. How can solar energy be converted into electrical energy.
j. Discuss the prospects of non-conventional energy sources in India.

SECTION B

2. Attempt any *three* of the following: 10 x 3 = 30

a. Describe the difference between the direct radiation and diffuse radiation.
b. Explain the principle of conversion of solar energy into heat. Explain a flat plate solar collector.
c. Explain Thermal Energy storage for solar heating and cooling. What are limitations of solar plants?
d. Discuss the difference between a geothermal power plant and thermal power plant. Categorize resources of geothermal energy.
e. What is meant by dry steam, wet steam and hot water geothermal system?

SECTION C

3. Attempt any *one* part of the following: 10 x 1 = 10

(a) Discuss the principle of a concentrating solar collector. How it differs with flat plate collector? How collector coating can be used to improve the performance of

the collector with reference to the flat plat collector? What is the concentrating ratio for focusing collector?

(b) Explain the working principle of MHD generator. Also, discuss the practical problems associated with MHD power generation.

4. Attempt any *one* part of the following: 10 x 1 = 10

(a) Explain the difference between a fuel cell and battery. What are the uses and advantages of fuel cells?

(b) Derive the expression for power and efficiency of a thermionic generator.

5. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe main considerations in selecting a site for wind farm. Discuss merits and demerits of wind energy.

(b) Describe the basic principle of wind energy conversion and derive the expression for power developed due to wind.

6. Attempt any *one* part of the following: 10 x 1 = 10

(a) Describe the basic principle of ocean thermal energy conversion system. Describe the "Open Cycle" Ocean thermal energy conversion system.

(b) Classify biomass conversion technologies. Explain anaerobic digestion process for production of methane.

7. Attempt any *one* part of the following: 10 x 1 = 10

(a) What is a fuel cell? Describe the principle and working of a H_2O_2 fuel cell. Give also limitations.

(b) What do you mean by the nature of wind? Describe the construction and working of a wind energy conversion system (WECS) with the help of a net sketch.