M.TECH/RE/2ND SEM/REEN 5203/2018

RENEWABLE ENERGY II
(REEN 5203)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**

(i) Horizontal axis wind turbines require
(a) small tower (b) yaw mechanism
(c) high start up speed (d) all of these.

(ii) Most potential site for geothermal engineering is
(a) the Pacific Ocean (b) the Atlantic Ocean
(c) the Indian Ocean (d) the Arabic Sea.

(iii) 99% of Earth's core temperature is above
(a) 1000^{o} C (b) 500^{o} C
(c) 2000^{o} C (d) 100^{o} C.

(iv) Which energy is the manifestation of the Sun's energy?
(a) Wind (b) Tidal
(c)Wave (d) all of these.

(v) In tidal power conversion, the mostly used turbine is
(a) bulb turbine (b) propeller turbine
(c) rim turbine (d) all of these.

(vi) Wave power is originated from
(a) tides (b) winds
(c) sea currents (d) all of these.

(vii) Efficiency of OTEC cycle is nearly
(a) 2-3% (b) 5-7%
(c) 7-12 % (d) more than 12%.

(viii) SOFC operates at temperature range of:
(a) ~80°C (b) ~300°C
(c) ~500°C (d) ~1000°C.

(ix) Pelton turbine is
(a) reaction turbine (b) tangential flow turbine
(c) applicable for medium head (d) none of the these.

(x) Kaplan turbine is
(a) tangential flow turbine (b) mixed flow turbine
(c) low discharge turbine (d) low head turbine.

Group - B

2. (a) What are the advantages and disadvantages of wind power?

(b) Draw a schematic diagram of wind power generating system and indicate its all major components.

6 + 6 = 12

3. (a) Discuss briefly about different type of geothermal resources.

(b) Explain the operation of a liquid dominated geothermal system.

8 + 4 = 12

Group - C

4. (a) What is tidal power? Discuss its merits and demerits.

(b) Discuss about the environmental impact of tidal power system.

6 + 6 = 12

5. (a) What are the advantages and disadvantages of wave power?

(b) Briefly explain the working principles of any two types of wave energy conversion system.

6 + 6 = 12

Group - D

6. (a) What is OTEC? What are the disadvantages of OTEC System?

(b) Explain, with a layout the working principle of closed OTEC cycle.

6 + 6 = 12

7. (a) How are water turbines classified?

(b) Draw a schematic diagram of a hydro-electric power plant and indicate its different components.

6 + 6 = 12

Group - E

8 (a) Briefly discuss the basic principle of MHD generator.

(b) Discuss, with a diagram about the thermoelectric power conversion system.

6 + 6 = 12

9. (a) How are fuel cells classified?

(b) Discuss about the production of hydrogen from bio-resources.

6 + 6 = 12