

ME16003 – RENEWABLE SOURCES OF ENERGY

(Regulation 2016)

Time: Three hours

Maximum : 80 Marks

Answer **ALL** questions**PART A - (8 X 2 = 16 marks)**

1. Steam Power Plants are more popular in electric power generation because _____
 - (a) Work output of turbine is very large than work input to the pump
 - (b) Work output of turbine is very small than work input to the pump
 - (c) Work output of turbine is equal to work input to the pump
 - (d) None of the above
2. A Solar cell converts
 - (a) Heat energy into electrical energy
 - (b) Solar energy into electrical energy
 - (c) Heat energy into light energy
 - (d) Solar energy into light energy
3. _____ is a major factor in determining the methane yield and methane production rates from the digestion of biomass.
 - (a) Seeding (b) Contamination (c) Substrate composition (d) Moisture content
4. The temperature difference between the upper layers and deeper layers of the ocean should be ----
-----to install an OTEC power plant.
 - (a) 40°C (b) 50°C (c) 20°C (d) 30°C
5. Why utilization of wind is considered as part of solar technology?
6. What are the different geothermal fluids and give its temperature range?
7. Explain: Liquid hydrogen is superior to gasoline on weight basis and inferior on volume basis?
8. How the hydrogen fuel can be used in transportation?

PART B - (4 X 16 = 64 marks)

09. (a) Enumerate the different types of concentrating solar collectors with neat sketch. **(16)**
Why orientation is needed in concentrating type solar collector. Justify?
- (OR)**
- (b) Discuss the working principle of Solar photovoltaic power generation system? **(16)**
Describe the layout of a typical Solar PV array commercially available?

10. (a) With a neat sketch, elaborate the working principle of a Darrius rotor wind turbine. (16)
Compare the Darrius rotor wind turbine with a three blade horizontal shaft wind turbine with regard to merits, demerits and practical size.

(OR)

- (b) Explain the wind energy scenario in tamilnadu, India and around the world? Discuss (16)
the key issues impeding the growth of wind energy conversion systems?

11. (a) State the principle of magneto hydrodynamic (MHD) generator? Explain Hall effect (16)
in MHD generator and the methods adopted to overcome the limitations?

(OR)

- (b) (i) Explain about the gas produced from the decomposition of organic matter, (8)
generated through anaerobic digestion of biodegradable wastes?
(ii) Give a real time production case to produce a ethanol from sugarcane? (8)

12. (a) Discuss the current status of tidal power plants in the world and in India. Has the (16)
tidal energy being utilized efficiently, Justify? Enumerate the difference in the
sequential operating modes of single effect and double effect tidal scheme?

(OR)

- (b) With a neat sketch, Explain the construction and working principle of power (16)
generation systems employed in liquid dominated hydrothermal geothermal
systems?