Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

A Constituent Institute of Manipal University, Manipal

II SEMESTER M.TECH (Open Elective) END SEMESTER EXAMINATIONS, APRIL/MAY 2017

SUBJECT: RENEWABLE ENERGY TECHNOLOGY (MME 5286)

REVISED CREDIT SYSTEM

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL the** questions.
- Missing data may be suitably assumed.

1A.	State the advantages and disadvantages of wind energy system.	**2.0**
1B.	Describe how the power of a wind turbine depends on wind speed establishing an empirical relation.	**3.0**
1C.	Estimate the annual energy production from a horizontal axis wind turbine with a 15 m diameter operating in a wind regime with an average speed of 8 m/s. Assume that the rotor efficiency is 65 % and that the wind turbine is operating at normal atmospheric conditions (ρ=1.225 kg/m^3) with 100 % efficiency.	**5.0**
2A.	For geothermal power plants, discuss why we need to inject back the pumped water to earth.	**4.0**
2B.	With a suitable sketch, explain the working of a binary cycle geothermal power plant and identify the main components in the plant.	**6.0**
3A.	List out the different manufacturing/synthesis methods for single crystal and thin films used for solar PV cells.	**4.0**
3B.	Explain the sputtering process of thin film growth for polycrystalline silicon with a diagrm.	**6.0**
4A.	Mention the basic theory of electrochemistry applied to fuel cell.	**5.0**
4B.	Explain in brief with a schematic, the working of a Proton-Exchange Membrane Cell (PEMC).	**5.0**
5A.	List the advantages of concentrating collectors over flat plate collectors.	**2.0**
5B.	Explain in brief with a neat diagram, the working of a flat plate solar collector.	**3.0**
5C.	Discuss briefly on anaerobic digestion applied to biomass conversion.	**3.0**
5D.	What are the advantages and the potential of tidal energy among renewable energy sources?	**2.0**