



# INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)  
Dundigal, Hyderabad -500 043

## MECHANICAL ENGINEERING

### ASSIGNMENT QUESTIONS

Course Name	:	<b>RENEWABLE ENERGY SOURCES</b>
Course Code	:	<b>A80324</b>
Class	:	IV Year-II Semester
Branch	:	Mechanical Engineering
Year	:	2018 – 2019
Course Faculty	:	Mr. G Sharat raju, Assistant Professor, ME Mr. A. Venuprasad, Assistant Professor, ME

#### OBJECTIVES

Renewable resources include solar energy, wind, falling water, the heat of the earth (geothermal), plant materials (biomass), waves, ocean currents, temperature differences in the oceans and the energy of the tides. Renewable energy technologies produce power, heat or mechanical energy by converting those resources either to electricity or to motive power. The policy maker concerned with development of the national grid system will focus on those resources that have established themselves commercially and are cost effective for on-grid applications.

S. No	Question	Blooms Taxonomy Level	Course Outcome
<b>ASSIGNMENT-I</b>			
1	Write short notes on the following a. Pyrheliometer b. Pyranometer.	Remember	1
2	Briefly explain the role and potential of new and renewable energy with reference to India	Understand	1
3	What are the reasons for variation in solar radiation reaching the earth than received at the outside of the atmosphere?	Remember	1
4	Explain the following a. Solar radiation on inclines surface b. The hour angle	Understand	2
5	Differentiate flat plate collector and parabolic collector with their salient features	Understand	4
6	Describe the basic components of flat plate collector with a neat sketch	Understand	5
7	How solar air collectors are classified? What is the main application of a drier?	Remember	4
8	Discuss the thermal analysis of flat plate collector with necessary equations.	Understand	5
9	Explain the thermal analysis of flat plate collectors with necessary equations	Understand	4

	With the aid of neat sketch classify flat plate collectors for water/air heating.	Remember	
10	Explain the construction and working of a solar pond with neat sketch. What are its advantages and disadvantages?	Understand	6
<b>ASSIGNMENT-II</b>			
1	Write short notes on hydrogen storage and electromagnetic energy storage.	Understand	7
2	Explain with a neat diagram the working of various types of wind generators?	Understand	8
3	Explain with neat sketch, the methods of operation of tidal power generation?	Remember	9
4	What are the main types of OTEC power plants? Describe their working in brief?	Understand	10
5	Derive that the maximum power that can be extracted from a horizontal axis wind turbine is only 59%	Remember	11
6	Describe the different schemes for wind electric generation or describe the generating systems?	Remember	11
7	Discuss the present status of development of biomass energy resources in India	Understand	12
8	Describe the basic principle of operation of an MHD generator. Derive expression for maximum power generation per unit volume of a generator?	Understand	12
9	Explain the construction and working of Janata biodigester with a neat sketch	Understand	13
10	What are the main plants proposed is for energy plantation especially in India?	Remember	14

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