Question Paper

Exam Date & Time: 28-Apr-2018 (09:30 AM - 12:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES IV SEMESTER B.S. (ENGG.) END - SEMESTER THEORY EXAMINATIONS APRIL - 2018 DATE: 24 APRIL 2018 TIME: 9:30 AM TO 12:30 PM Renewable Energy Utilization [ME 242]

Marks: 100

Duration: 180 mins.

Answer 5 out of 8 questions.

Missing data, if any, may be suitably assumed

1)	۵)	Explain with sketch the various angles required for solar radiation measurement.	(6)
	~)		
	B)	Explain various advantages and limitations of the Implementation of Renewable Energy Sources.	(6)
	C)	Calculate the angle made by beam radiation with the normal to a flat plate collector, tilted by 30^{0} from the horizontal, pointing due south, located at New Delhi, at 11:00 h (IST), on 1 June The latitude and longitude of New Delhi are 28^{0} 35' N and 77^{0} 12' E respectively. The standard IST longitude is 81^{0} 44' E.	(8)
2)	A)	Explain with help of neat sketch the working of solar absorption refrigeration system.	(8)
	B)	Explain the Hour angle and Day length with respect to solar earth system.	(6)
	C)	Explain effects of various parameters on the performance of liquid flat plat collector.	(6)
3)	A)	Show that the power output of a wind turbine cannot be more than 59.3 % of wind energy.	(6)
	B)	With a neat sketch explain working of forced circulation water heating system closed loop configuration.	(8)

	C)	Factors Affecting the Distribution of Wind Energy on the Surface of the Earth.	(6)
4)	A)	Explain with neat diagram 'Dolphin type' wave power machine.	(8)
	В)	With a neat diagram explain the working of pressurized natural circulation of solar water heater.	(6)
	C)	Explain advantages and disadvantages of horizontal Axis Wind Turbine [HAWT].	(6)
5)	A)	Explain with neat sketches the tube type turbines used in small scale hydroelectric power plants.	(8)
	В)	With neat sketch explain the working of suitable ocean thermal energy conversion [OTEC] closed system.	(6)
	C)	Explain advantages and disadvantages of small hydro schemes	(6)
6)	A)	Briefly explain various operational and environmental problems associated with geothermal power plants.	(6)
	B)	Explain with neat sketches the bulb type turbines used in small scale hydroelectric power plants.	(8)
	C)	Explain the terms Spring tide, Neap tide, low tide and high tide of ocean waves.	(6)
7)	A)	Draw a neat sketch of Floating Type Biogas plant and explain its construction and working.	(8)
	B)	With a neat sketch explain the working of Fixed Dome Type Biogas plant with emphasis on the various processes of biogas generation.	(6)
	C)	Explain various factors influencing for the generation of biogas.	(6)
8)	A)	With neat sketch explain the working of a suitable energy conversion device that makes use of hydrogen as fuel with	(6)
	В)	byproduct as water. Explain the construction and working of an open cycle MHD	(6)
	C)	With neat sketch explain the working of typical n-p thermoelectric power generation system.	(8)

-----End-----