Question Paper

Exam Date & Time: 27-Nov-2019 (02:00 PM - 05:00 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

INTERNATIONAL CENTRE FOR APPLIED SCIENCES END SEMESTER THEORY EXAMINATION NOVEMBER/DECEMBER 2019 IV SEMESTER B.S. (ENGG.)

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)	A)	With help neat sketch of suitable Solar Earth geometry brief the various angles required for solar radiation measurement.	(6)
	В)	What are different advantages and limitations to the Implementation of Renewable Energy Sources.	(6)
	C)	With suitable sketch explain the working of Forced circulation direct gain type solar dryers.	(8)
2)	A)	With neat diagram explain the working of solar absorption refrigeration system.	(8)
	B)	Define and explain the Hour angle and Day length with respect to solar earth system.	(6)
	C)	Define the following terms with respect to Solar liquid flat plate collector (i) Transmissivity absorptivity product (ii) Collector Efficiency factor (iii) Collector heat removal factor.	(6)
3)	A)	Show that the power output of a wind turbine cannot be more than 59.3 $\%$ of wind energy.	(6)
	В)	With neat sketch explain the working of vertical axis wind turbines (VAWT).	(8)
	C)	Explain the importance of	(6)

- i) Heat removal factor,
- ii) Collector efficiency factor, and
- iii) Transmissivity-Absorptivity product.
- ⁴⁾ With a sketch explain the working principle of closed ocean thermal energy ⁽⁸⁾

B) (6) Explain with a diagram 'Dolphin type' wave power machine. C) (6) With a diagram explain the working of solar chimney solar system. 5) With help of a sketch explain the working of suitable ocean thermal energy (8) conversion [OTEC] A) closed system. B) (6) List the site requirements and advantages and disadvantages of Tidal power plant. C) With neat sketch explain the geothermal energy conversion in liquid (6) dominated reservoir. (6) 6) Briefly explain various operational and environmental problems associated with geothermal A) power plants. B) Explain various advantages and disadvantages of geothermal energy. (6) C) (8) Explain the following terms of Spring tide, Neap tide, low tide and high tide of ocean waves. 7) (8) Draw a neat sketch of Floating Type Biogas plant and explain its working principle. A) B) Explain various factors influencing for the generation of biogas. (6) C) (6) With the help of sketch explain the working of downdraft type gasifier 8) (8) Explain the construction and working of an open cycle MHD generator with neat sketch. A) B) Write short notes on the working of Thermionic Converter (6) C) (6) With neat sketch explain the working of typical n-p thermoelectric power generation system

A)

conversion system.

-----End-----