

**INDIAN MARITIME UNIVERSITY**  
**(A Central University, Government of India)**  
**End Semester Examinations December 2017**

**B. Tech. (Marine Engineering)**

**Subject:** Renewable Energy Sources & Applications

**Code:** UG11E2704

**Semester:** VII

**Max. Marks:** 100

**Date:** 15.12.2017

**Pass Marks:** 50

**Duration:** 3 hrs

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**PART-A**

10x3 Marks=30 Marks

*(All questions are compulsory)*

1. a). What is renewable energy?
- b). What is the nature of solar radiation?
- c). Briefly describe passive solar heating with example.
- d). What is solar photovoltaic (PV) cell?
- e). What are the forms of silicon used in PV cell?
- f). What is biofuel?
- g). What are the adverse effect of hydroelectricity project?
- h). Briefly describe the reason for tide.
- i). Write the impact of wind turbine on wildlife.
- j). Name and define three modes of movement regarding wave energy technology.

**PART-B**

5x14 Marks=70 Marks

*(Answer any 5 of the following 7 questions)*

2. (a) What are the major sources/feedstock of biofuels? 5
- (b) Describe the fuel transformation process from various sources. 9
3. (a) Describe the energy generation process from barrages. 7
- (b) What are the environmental considerations for tidal barrages? 7
4. (a) Explain wave energy conservation system. 7
- (b) Write a short note on micro-turbine generation system. 7
5. (a) Draw and explain the solar energy water heater. 8
- (b) Write a short note on power tower. 6
6. (a) Explain the grid connected PV system and its interfacing with the utility. 7
- (b) Explain single crystal Czochralski silicon technology. 7
7. (a) What are the sources of renewable energy? 6

- (b) Explain with schematic diagram that various forms of renewable energy depend primarily on incoming solar radiation. 8
8. (a) Describe the basic components of a wind turbine with diagram. 8
- (b) Write a short note on geothermal energy. 6

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