

**INDIAN MARITIME UNIVERSITY**  
(A Central University, Government of India)  
End Semester Examinations- June-July 2019  
**Semester – VII**  
**B.Tech (Marine Engineering)**  
**Renewable Energy Sources & Applications**  
**(UG11E2704/E1804)**

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Date: 22-07-2019

Maximum Marks: 100

Time: 3 Hrs

Pass Marks: 50

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**PART – A (3 x10 = 30 Marks)**  
(Compulsory Questions)

- 1.a) What do you mean by non solar renewable energy?
- b) Define photo voltaic effect.
- c) Mention few suitable turbine for different head for hydroelectric power plant.
- d) What is meant by tidal range?
- e) Give an outline of energy reserved in India.
- f) What do you mean by green energy?
- g) Explain the principle of operation of acid fuel cell.
- h) What do you mean by solar panel?
- i) Define pitch angle?
- j) Give the details of biomass classification.

**PART – B** **(5 x14 = 70 Marks)**  
(Answer any five of the following)

2. a) What are the advantages of the solar water heater? ( 7 )
- b) What are the semiconductor materials used for solar cells? Explain( 7 )

3. a) Discuss the environmental aspect of energy utilization. (7)
- b) Write short note on "Passive solar collector". (7)
4. a) What is Geothermal energy ?How can geothermal energy are utilized for electric Power generation? (7)
- b)What are the factors affecting biogas generation. (7)
5. a) Explain the solar air conditioning and refrigeration system. (7)
- b)Explain the working principle of wind electric conversion system with a block diagram. (7)
6. a) Explain wave energy conversion system. (7)
- b) Write a short note on Micro-turbine generation system. (7)
7. a) What are the sources,globally advantages ,disadvantages,limitations of Tidal power? (7)
- b) Is peat biomass a fossil fuel? Explain (7)
8. What is Bio-mass? Why biomass is treated as renewable energy sources? Also list the various biomass resources available in India. (14)