

**FIFTH SEMESTER B.Sc. DEGREE EXAMINATION  
NOVEMBER 2011**

(CCSS)

Physics – Open Course

PH 5 D 01 (i) – NON-CONVENTIONAL ENERGY SOURCES

Three Hours

Maximum Weightage : 30

**Objective Type Questions.**

*Answer all twelve questions.*

1. Which among the following is the major component of the extra-terrestrial radiation ?
 

(a) Ultra violet ray.	(b) Infra-red ray.
(c) Visible ray.	(d) Cosmic ray.
2. The fundamental effect that is used in the conversion of solar energy to heat energy is :
 

(a) Photovoltaic effect.	(b) Faraday effect.
(c) Joule-Kelvin effect.	(d) Greenhouse effect.
3. Which among the following is not a part of a solar furnace ?
 

(a) Concentrator.	(b) Turbine.
(c) Heliostat.	(d) Receiver.
4. In a solar pond, solar energy is stored as :
 

(a) Thermal energy.	(b) Electrical energy.
(c) Chemical energy.	(d) Atomic energy.
5. The primary source behind wind energy is :
 

(a) Electrical energy.	(b) Tidal energy.
(c) Solar energy.	(d) Geothermal energy.
6. Which among the following is an advantage of wind energy ?
 

(a) It is non-renewable.	(b) It is renewable.
(c) It is maintenance free.	(d) It is noisy.
7. \_\_\_\_\_ is the name for the organic matter produced by terrestrial and aquatic plants and their derivatives :-

**Turn over**

8. Energy stored as thermal energy in the earth's crust is called \_\_\_\_\_.
9. Which among the following is not an energy source from ocean ?
- (a) OTEC. (b) Hydroelectric energy.  
(c) Photovoltaic energy. (d) Tidal energy.
10. The power of a battery is measured in :
- (a) Volts. (b) Watts.  
(c) Amperes. (d) Joules.
11. Tide is a periodic rise and fall of the water level of the sea which are carried by the \_\_\_\_\_ the sun and the \_\_\_\_\_ on the water of the earth.
12. Which among the following is not a non-conventional source of energy ?
- (a) Solar energy. (b) Hydro energy.  
(c) Hydrogen energy. (d) Tidal energy.

(12 × ¼ = 3 weight)

## II. Short Answer Type Questions.

Answer all nine questions.

13. What are the major solar radiation measuring instruments ? What is their mode of operation ?
14. Which are the essential parts of a flat plate collector ?
15. List two merits and demerits of solar energy utilization.
16. What are the factors that determine the output from a wind energy converter ?
17. List four disadvantages of wind energy conversion.
18. What are the two methods for ocean thermal electric power generation ?
19. What are the major components of a tidal power plant ?
20. List four disadvantages of wave energy.
21. What are the two types of batteries ? Give examples for each.

(9 × 1 = 9 weight)

## III. Short Essay Type Questions.

Answer any five questions from seven.

22. What do you mean by a solar greenhouse ? What are the different types of solar greenhouses ?
23. What is the working principle of a solar cell ? List the advantages and disadvantages of solar cell over other conventional options.
24. What is meant by a wind turbine generator ? Discuss the horizontal axis and vertical axis types of wind turbine generators.

25. List the advantages and disadvantages of geothermal energy over other forms of energy.
26. Discuss the different methods of obtaining energy from biomass.
27. Explain the source of energy in waves. Discuss a method for converting wave energy to mechanical energy.
28. Discuss the problems associated with storage of hydrogen fuel in motor vehicles.

(5 × 2 = 10 weightage)

#### IV. Essay Questions.

Answer any **two** questions from three.

29. What are the main components of a solar distillation system ? Discuss the working principle of a solar distillation system with the help of a schematic illustrating the different parts. Discuss the applications of solar distillation systems.
30. Classify the geothermal fields of earth ? Write short notes on the different geothermal sources. Discuss the different applications of geothermal energy.
31. What do you mean by a fuel cell ? Discuss the principle of operation of a fuel cell using a schematic. What are the advantages and applications of a fuel cell ?

(2 × 4 = 8 weightage)