

**FIFTH SEMESTER B.Sc. DEGREE (SUPPLEMENTARY)
EXAMINATION, NOVEMBER 2017**

(UG—CCSS)

PH 5D 01 (1)—NON-CONVENTIONAL ENERGY SOURCES

(2013 Admissions)

Time : Three Hours

Maximum : 30 Weightage

Section A

Answer all questions.

Twelve objective type questions, in bunches of four questions.

Each bunch carries a weightage of 1.

- I. 1 The solar radiation received outside the earth's atmosphere is called _____.
- 2 Wind turbines are connected to _____ for converting wind energy to electrical energy.
- 3 In biomass, solar energy is stored in the form of chemical energy by the process of _____.
- 4 A solar furnace uses a _____ for tracking the sun.
- II. 5 Which among the following is the main advantage of solar energy with regard to its applications ?
- (a) Intermittent nature. (b) Large area requirement.
- (c) Non-polluting. (d) High cost fuel.
- 6 The purpose of a solar cell is to convert solar energy to :
- (a) Electrical energy. (b) Heat energy.
- (c) Chemical energy. (d) Magnetic energy.
- 7 In a solar pond, the stored heat energy is lost, in course of time, mainly because of :
- (a) Radiation. (b) Conduction.
- (c) Convection. (d) Reflection.
- 8 Wind energy option is :
- (a) Renewable. (b) Non-renewable.
- (c) Highly polluting. (d) Maintenance free.

III. State whether the following statements are True or False :

- 9 In sun the energy production occurs by nuclear fission.
- 10 The primary source behind wind energy is solar energy.
- 11 Oxygen causes global warming.
- 12 Energy stored as thermal energy in the earth's crust is called biomass energy.

(12 × ¼ = 3 weightage)

Section B

Answer all questions.

Each question carries a weightage of 1.

- 13 What is the working principle of a Pyrheliometer ?
- 14 Write any *two* merits of a solar cooker.
- 15 What are the causes for local winds ?
- 16 Write any *two* advantages of geothermal energy.
- 17 Give *two* sources of energy available from ocean.
- 18 What are the essential parts of a tidal power plant ?
- 19 Mention any two applications of a fuel cell.
- 20 Write down the problems associated with storage of hydrogen fuel in motor vehicles.
- 21 List any *two* methods of energy storage.

(9 × 1 = 9 weightage)

Section C

Answer any five questions.

Each question carries a weightage of 2.

- 22 Discuss the principle of conversion of solar radiation to heat.
- 23 List three advantages and disadvantages of a photovoltaic energy.
- 24 Briefly discuss the applications of wind energy.
- 25 Write short note on any two biomass conversion technologies.
- 26 Explain a method for converting wave energy to mechanical energy.
- 27 Discuss the working principle of a battery.
- 28 Briefly discuss any two types of solar green houses.

(5 × 2 = 10 weightage)

Section D

Answer any two questions.

Each question carries a weightage of 4.

- 29 With the help of a schematic, explain the working principle of a natural circulation solar water heater. List the merits of a solar water heater over a conventional water heater.
- 30 Explain the principle of wind energy conversion. With the help of a block diagram, discuss the basic components of a wind energy conversion system.
- 31 Discuss the different solid, liquid and gaseous biofuels.

(2 × 4 = 8 weightage)