18PHU23A

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2022
(Sixth Semester)

Branch – **PHYSICS**

DISCIPLINE SPECIFIC ELECTIVE – II :
ALTERNATE ENERGY RESOURCES

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 x 1 = 10)

1. Which of the following is a disadvantage of renewable energy?
   (i) High pollution (ii) Available only in few places
   (iii) High running cost (iv)Unreliable supply

2. Common energy source in Indian villages is:
   (i) Electricity (ii) Coal (iii) Sun (iv) Wood and animal dung

3. The efficiency of solar cell is _____
   (i)15% (ii)20% (iii)10% (iv)30%

4. The value of solar constant is _____
   (i)1253 W/m^2 (ii)1353 W/m^2 (iii)1343 W/m^2 (iv)1563 W/m^2

5. Biomass can be converted to
   (i)Methane gas (ii) ethanol (iii)biodiesel (iv)all of the above

6. The aerobic digestion of sewage is used to produce _____
   (i) Biomass (ii)Bio fuels (iii)Synthetic fuels (iv)Metal articles

7. The process of producing energy by utilizing the heat trapped inside the earth surface is
   called _____
   (i)Geothermal energy (ii)Hydro energy (iii)Solar energy (iv)Wave energy

8. What is hot molten rock called?
   (i)Lava (ii)Magma (iii)Igneous rocks (iv)Volcano

9. Which of the following supplies maximum amount of hydrogen gas?
   (i)Natural gas (ii) Anaerobic Digestion
   (iii)Wastewater treatment (iv) Electrolysis

10. Which of the following use hydrogen as fuel?
    (i) Fossil fuels (ii) Anaerobic digestion
    (iii)Fuel cells (iv) Cooking

SECTION - B (35 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 7 = 35)

11a. Bring out the differences of primary and secondary energy sources.

(OR)

b. Compare and contrast conventional and non conventional energy sources.

12a. Narrate briefly about the main applications of a solar pond.

(OR)

b. Enumerate the principle of conversion of solar energy into heat.

Cont...

13a. How does biomass conversion take place?

(OR)

b. How are biogas plants classified? Explain them briefly.

14a. Categorise the kinds of geothermal resources.

(OR)

b. Summarise the advantages and disadvantages of geothermal energy over other energy forms.

15a. Distinguish between phosphoric acid fuel cell and alkaline fuel cell.

(OR)

b. Classify the principle methods that have been considered for hydrogen storage.

SECTION - C (30 Marks)

Answer any **THREE** Questions
ALL Questions Carry **EQUAL** Marks (3 x 10 = 30)

16. Outline the conventional and non-conventional energy scenario in India.

17. Describe a nonconductive solar pond for solar energy collection and storage.

18. Classify the bio gas plants and explain their operation parameters.

19. Explain how heat is extracted from hot dry rock resources.

20. Elaborate the types of fuel cells. How can you calculate the efficiency of fuel cells?

Z-Z-Z END