22PHU625A/N20PHU24A

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION MAY 2025
(Sixth Semester)

Branch – **PHYSICS**

MAJOR ELECTIVE COURSE – II : ALTERNATE ENERGY RESOURCES

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1 Which of the following is considered a non-renewable energy source?
(i) Solar (ii) Wind
(iii) Coal (iv) Hydro power

2 The primary function of a solar collector is
(i) Convert solar energy into chemical energy
(ii) To absorb light and convert it into thermal energy
(iii) reflect sunlight away from the surfaces
(iv) convert wind energy in to solar heat

3 What is the primary factor for classifying gas plant as fixed dome or floating drum?
(i) type of biomass used (ii) method of gas collection
(iii) size of the plant (iv) geographic location

4 The main source of geothermal energy is
(i) Solar radiation (ii) Heat from earth's interior
(iii) wind currents (iv) ocean tides

5 Which type of the fuel cell operates at high temperature, typically between 800 and 1000 degree Celsius?
(i) Solid oxide fuel cell (ii) proton exchange membrane fuel cell
(iii) Direct methanol fuel cell (iv) Alkaline fuel cell

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a Give the advantages and disadvantages of conventional energy sources.
OR
b Comment on the energy scenario in India.

7 a Describe the working principle of solar water heater.
OR
b Explain how the water can be purified by solar desalination process?

8 a Write a note on photosynthesis process.
OR
b Give the operation parameters of biogas plant.

Cont...

9 a Enumerate the types of geothermal energy resources.

OR

b Sketch the layout of micro hydro scheme.

10 a Describe the method of storage hydrogen.

OR

b Discuss the potential applications of a fuel cell.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a Explain the different energy resources and their roles.

OR

b Discuss the importance of non-conventional energy sources.

12 a Explain solar passive space heating and cooling system.

OR

b Describe the principle of any one of the solar thermos-mechanical system.

13 a Outline the classification of biogas plants.

OR

b What is biomass gasification? Explain briefly.

14 a Explain (i) hot dry rock resources and (ii) Magma resources.

OR

b Discuss the advantages and disadvantages of small hydro schemes.

15 a Give the properties of hydrogen and application of hydrogen energy.

OR

b Explain the working principle of an alkaline fuel cell.

Z-Z-Z END