

(7 pages)

Reg. No. : _____

Code No. : 20055 E Sub. Code : AEPH 61

B.Sc. (CBCS) DEGREE EXAMINATION, APRIL 2025.

Sixth Semester

Physics

Major Elective — ENERGY PHYSICS

(For those who joined in July 2020 only)

Time : Three hours

Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. World energy needs are rising due to _____
- (a) deforestation
 - (b) increasing population and industrialization
 - (c) inflation
 - (d) natural calamities

2. Non-conventional sources of energy are _____

- (a) exhaustible
- (b) inexhaustible
- (c) neither exhaustible nor inexhaustible
- (d) too expensive

3. Solar pond is used to _____

- (a) collect and store the solar energy
- (b) reflect the solar energy
- (c) divert solar energy
- (d) none of these

4. The sun's energy is due to _____

- (a) the nuclear fission of hydrogen
- (b) the nuclear fusion of hydrogen
- (c) the natural combustion of hydrogen
- (d) the nuclear fission of uranium

5. The material used for making solar cells is _____

- (a) silicon
- (b) carbon
- (c) sodium
- (d) magnesium

6. Photovoltaic cell or solar cell converts —————
 (a) thermal energy into electricity
 (b) electromagnetic radiation directly into electricity
 (c) solar radiation into thermal energy
 (d) solar radiation into kinetic energy
7. Which of the following is not a biomass resource?
 (a) animal wastes
 (b) forestry residue
 (c) agricultural residue
 (d) sunlight
8. Biomass can be used to make —————
 (a) chemicals (b) fibres
 (c) biochemicals (d) transportation fuels
9. The power generated in a wind mill —————
 (a) depends on the height of the tower
 (b) depends on wind velocity
 (c) can be increased by planting tall trees close to the tower
 (d) all the above

10. Which of the following categories does tidal power fall into?
 (a) hydrothermal (b) hydropower
 (c) solar (d) wind

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 250 words.

11. (a) Compare commercial and non-commercial energy sources.
 Or
 (b) Write the merits, demerits and application of natural gas.
12. (a) Explain the principles and working of solar cooker.
 Or
 (b) Describe the construction and working of solar water heater.

13. (a) Write the limitations of photovoltaic efficiency.

Or

- (b) Write the applications of solar photovoltaic system.
14. (a) Explain the generation of biogas.

Or

- (b) Describe the methods for obtaining energy from biomass.
15. (a) Explain a wind energy storage system.

Or

- (b) Describe a wave energy conversion devices.

PART C — ($5 \times 8 = 40$ marks)

Answer ALL questions, choosing either (a) or (b).

Each answer should not exceed 600 words.

16. (a) Discuss in detail about the world's energy reserve and its availability.

Or

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- (b) Write the difference between renewable and non-renewable sources of energy. Also give the advantages and disadvantages of renewable energy sources.

17. (a) Explain the nature of solar radiation and its components.

Or

- (b) Describe the components of flat plate solar collector.

18. (a) Explain the different types of solar cells.

Or

- (b) Describe, with a block diagram the solar PV powered area lighting system.

19. (a) Describe, giving neat sketch, floating dome biogas plant and its functioning. What are its advantages and disadvantages?

Or

- (b) Describe a fixed dome type biogas plant with the help of a labelled diagram.

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20. (a) Discuss, hydrogen as an alternate fuel for motor vehicles.

Or

- (b) (i) Explain the types of energy that we get from ocean.
(ii) Define chemical energy and explain the chemical energy resources.
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