(6 pages) **Reg. No. :** .....

Code No. : 20316 E **Sub. Code : CEPH 61**

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

Sixth Semester

PHYSICS

Major Elective — ENERGY PHYSICS

(For those who joined in July 2021 and 2022 only)

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The percentage of global fossil fuel reserves are found in India is

   (a) 20% (b) 17%

   (c) 6.85% (d) 4%

2. Natural gas consists of

   (a) Ethane (b) Methane

   (c) Propane (d) Butane

3. Biogas is a mixture of

   (a) CH_4 and CO_2 (b) CH_4 and CO

   (c) CO_2 and SO_2 (d) CO and SO_2

4. The combination of n-type and p-type semiconductor constitutes

   (a) solar cooker (b) solar cell

   (c) solar ponds (d) none

5. Energy–mass relation is

   (a) $E = mc^2$ (b) $E = m^2c^2$

   (c) $E = m^3c^2$ (d) $E = mc$

6. Fuel cells are

   (a) carbon cell

   (b) hydrogen-oxygen cell

   (c) nuclear cell

   (d) chromium cell

7. Methane is a ———— gas.

   (a) clean (b) impure

   (c) polluted (d) pure

8. The standard value of solar constant is

(a) 1 kw/m^2 (b) 1.367 kw/m^2

(c) 1.5 1 kw/m^2 (d) 5 1 kw/m^2

9. Solar cell is a ———— diode.

(a) p–n junction (b) p–p junction

(c) n–n junction (d) none

10. The method of production of hydrogen is

(a) electrolysis of water

(b) thermolysis of water

(c) steam reforming of methane

(d) bio-photosynthesis

PART B — (5 × 5 = 25 marks)

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

Each answer should not exceed 250 words.

11. (a) Compare : Renewable and conventional energy. (5 Points)

Or

(b) Define : Non-renewable energy. State and explain various form of energy.

12. (a) Write a short note on :

(i) Solar cooker

(ii) Solar pond.

Or

(b) Discuss the principle and working of a solar cell.

13. (a) Explain how solar radiations converted into heat.

Or

(b) State the merits and demerits of solar energy.

14. (a) Define : Biomass energy. Classify biomass energy. Discuss any one method of biomass energy.

Or

(b) Explain biogas plant.

15. (a) Discuss in detail about the concepts of tidal energy.

Or

(b) Explain the working principle of a wind mill.

PART C — (5 × 8 = 40 marks)

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

Each answer should not exceed 600 words.

16. (a) Describe how coal is used as sources of energy.

Or

(b) Distinguish : Renewable and conventional energy.

17. (a) Explain the working principle of liquid flat plate collector.

Or

(b) Describe the working principle of solar water heating system.

18. (a) State and explain advantages and disadvantages of biomass energy.

Or

(b) Discuss in detail aspect of Deen Bandhu model gas plant.

19. (a) Describe the working of PU powered fan.

Or

(b) Discuss the types of solar cell. Explain their limitations.

20. (a) Describe in details of the process of fuel cells.

Or

(b) Explain the following :

(i) Tidal energy

(ii) Wind energy.

———————