

(6 pages)

Reg. No. :

Code No. : 7763

Sub. Code : WPHE 11

M.Sc.(CBCS) DEGREE EXAMINATION,
NOVEMBER 2023.

First Semester

Physics – Elective – I

ENERGY PHYSICS

(For those who joined in July 2012 onwards)

Time : Three hours

Maximum : 75 marks

PART A — (15 × 1 = 15 marks)

Answer ALL questions.

Choose the correct answer :

1. Fossil fuels are _____
(a) renewable
(b) non-renewable
(c) not used to make electricity
(d) none of these
2. Which of the below theory is related to non-renewable resources?
(a) Game theory (b) Phlogiston theory
(c) Big bang theory (d) Hotelling's theory

3. Chemical energy is stored in _____.
(a) coal (b) food
(c) atoms (d) all of the above
4. How much time does it take for one tidal cycle?
(a) 22 hour 20 min (b) 24 hour 50 min
(c) 20 hour 10 min (d) 22 hour 50 min
5. A tide whose difference between high and low tides is least is called as _____.
(a) diurnal tide (b) neap tide
(c) spring tide (d) ebb tide
6. What does OTEC stand for?
(a) Ocean Thermal Energy Cultivation
(b) Ocean Thermal Energy Conversion
(c) Ocean Techno Energy Conservation
(d) Ocean Thermal Energy Consumption
7. What is the main source for the formation of wind?
(a) uneven land (b) sun
(c) vegetation (d) seasons
8. What are used to turn wind energy into electrical energy?
(a) turbine (b) generators
(c) yaw motor (d) blades

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9. When did the development of wind power in India begin?
- (a) 1965 (b) 1954
(c) 1990 (d) 1985
10. Biogas is also called as _____
- (a) biobutanol (b) biodiesel
(c) bioethanol (d) bio methane
11. The aerobic digestion of sewage is utilized in the production of
- (a) metal articles
(b) biofuels
(c) biomass
(d) synthetic fuels
12. Which of the following does not serve as a source of biomass?
- (a) hybrid poplar (b) trap grease
(c) willow algae (d) iron nails
13. The operating temperature of a central receiver power tower of solar plant is
- (a) 500 – 1000°C (b) 100 – 200°C
(c) 5000 – 10,000°C (d) 1000 – 5000°C

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14. Which of the following is commonly used material in solar cells?
- (a) aluminium (b) germanium
(c) silicon (d) copper
15. Efficiency of practically used solar cell is approximately _____.
- (a) 25% (b) 15%
(c) 40% (d) 60%

PART B — (5 × 4 = 20 marks)

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

16. (a) Write notes on conventional energy sources.

Or

- (b) Explain chemical energy.

17. (a) Write any five uses of tidal energy.

Or

- (b) Explain how tidal energy is produced.

18. (a) Explain briefly the basic principles of wind energy conversion

Or

- (b) Write the applications of wind energy.

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19. (a) Explain briefly the wet process in biomass conversion technology

Or

- (b) Write the advantages of aerobic digestion.

20. (a) Write the electrical characteristics of a solar cell.

Or

- (b) Explain the working of a solar cooker.

PART C — (5 × 8 = 40 marks)

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

21. (a) Explain in detail about the prospects of renewable and non-renewable energy resources.

Or

- (b) Explain about nuclear energy with its distribution process in detail.

22. (a) Explain the different types of blades and the forces in the blades in wind energy conversion system.

Or

- (b) Explain Ocean thermal energy conversion in detail.

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23. (a) Explain the different types of blades and the forces in the blades in wind energy conversion system.

Or

- (b) Explain the advantages and disadvantages of the conversion of wind energy system.

24. (a) Enumerate the basic principle and generation of biogas with the help of a diagram.

Or

- (b) Write the properties and used of biogas in detail.

25. (a) Demonstrate how solar cells are used for direct conversion solar energy to electrical power.

Or

- (b) Write about solar pond give its applications in detail.

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