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

Code No. : 7405 **Sub. Code : ZPHE 44**

M.Sc. (CBCS) DEGREE EXAMINATION, NOVEMBER 2024.

Fourth Semester

Physics

Elective – RENEWABLE ENERGY SOURCES

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

Time : Three hours Maximum : 75 marks

PART A — (10 × 1 = 10 marks)

Answer ALL questions.

Choose the correct answer :

1. The types of solar energy exists are
   (a) 5
   (b) 4
   (c) 3
   (d) 2

2. Which of the following is not an example of Active solar energy?
   (a) Radiant floor
   (b) Concentrated solar power
   (c) Trombe wall
   (d) Photovoltaic system

3. How many types of hydroelectric power turbines exists?
   (a) 5 (b) 4
   (c) 3 (d) 2

4. Fuel cell converts chemical energy to electrical energy using a reaction that
   (a) Eliminates combustion of fuel
   (b) Requires combustion of fuel
   (c) Requires no ignition of fuel
   (d) Fuel is not required

5. The fuel cell is considered a battery in which ———— is continuously replaced.
   (a) Fuel only
   (b) Oxidizer
   (c) Both fuel and oxidizer
   (d) None of the mentioned

6. What is the voltage output of hydrogen_oxygen fuel cell? (in V)

(a) −1.23 (b) −1.45

(c) −1.01 (d) −93

7. Which of the following is not a requirement for a useful battery?

(a) It should be light and compact

(b) It should have a reasonable life span

(c) It should ideally have a constant voltage throughout its lifespan

(d) It should supply Alternating Current (Ac)

8. Which of the following statements is true regarding a primary cell?

(a) The electrode reactions can be reversed

(b) It can be recharged

(c) An example of a primary cell is a mercury cell

(d) An example of a primary cell is a nickel-cadmium storage cell

9. Which of the following is the electrolyte used in a dry cell?

(a) Ammonium chloride

(b) Manganese dioxide

(c) Potassium hydroxide

(d) Sulphuric acid

10. What is the role of manganese dioxide in a dry cell?

(a) It acts as an electrolyte

(b) It acts as the cathode

(c) It acts as an anode

(d) It acts as a depolarizer

PART B — (5 × 5 = 25 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 250 words.

11. (a) Explain primary energy in nature.

Or

(b) What are the secondary energy resources?

12. (a) Explain solar radiation.

Or

(b) What are solar collectors? Explain.

13. (a) What is tidal energy? Explain.

Or

(b) Explain the basic theory of renewable energy sources.

14. (a) Describe thermo electric resources.

Or

(b) Explain thermionic energy in nature.

15. (a) Write short note on chemical energy.

Or

(b) What is fuel cell? Explain.

PART C — (5 × 8 = 40 marks)

Answer ALL questions, choosing either (a) or (b).
Each answer should not exceed 600 words.

16. (a) What are the importance of renewable resources?

Or

(b) What is the energy scenario in India? Explain.

17. (a) Explain solar cooker.

Or

(b) Describe bio mass energy in details.

18. (a) Explain geo thermal resources and its types.

Or

(b) How one can generate electricity from heat? Explain.

19. (a) Explain nuclear energy.

Or

(b) How can you generate electricity from nuclear sources?

20. (a) Explain advantages of fuels.

Or

(b) Describe any two advantages of fuel cell.

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