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**Presidency University**

**Bengaluru**

**SCHOOL OF ENGINEERING**

**Make-up Examination July-2024**

**Semester**: 2

**Course Code**: CHE 1008

**Course Name**: Energy & Sustainability

**Program** : B.Tech,

**Date**: 09 July 2024

**Time**: 1.30 PM – 4.30 PM

**Max Marks**: 100

**Weightage**: 50%

**Instructions:**

1. *Read the question properly and answer accordingly.*
2. *Question paper consists of 3 parts.*
3. *Scientific and Non-programmable calculators are permitted.*

**Part A [Memory Recall Questions]**

**Answer ANY TEN Questions. Each question carries 2 marks. (10Qx2M=20M)**

1. What is equitable use of energy? **(C.O.NO.1) [Knowledge Level]**

2. What is pumped-storage hydropower? **(C.O.NO.1) [Knowledge Level]**

3. Which government body is giving star rating system for electrical appliances?  
 **(C.O.NO.2) [Knowledge Level]**

4. Given an example each for primary and secondary type of fuel. **(C.O.NO.1) [Knowledge Level]**

5. The wind is a by-product of which energy? **(C.O.NO.1) [Knowledge Level]**

6. Who discovered photovoltaic effect? **(C.O.NO.1) [Knowledge Level]**

7. What is responsible for charge transport in electrodes? **(C.O.NO.1) [Knowledge Level]**

8. Write down the Nernst’s equation. **(C.O.NO.2) [Comprehension Level]**

9. Which of the following component of battery take part in the reduction reactions?

**(C.O.NO.2) [Comprehension Level]**

10. Give an example for reserve battery. **(C.O.NO.3) [Comprehension Level]**

11. Suggest a suitable anti-reflective coating materials for photovoltaic cell.

**(C.O.NO.3) [Comprehension Level]**

12. Mention any two ways with which energy conservation can be achieved.

**(C.O.NO.3) [Comprehension Level]**

**Part B [Thought Provoking Questions]**

**Answer ANY FIVE Questions. Each question carries 10 marks. (5Qx10M=50M)**

13. Identify the type of renewable energy where solid fuel made from plant materials is converted into electricity. Discuss the advantages and disadvantages of this conversion.  **(C.O.NO.1) [Knowledge Level]**

14. Fuel is a combustible substance which produces large amount of energy in the form of heat and light. These fuels can be classified in different ways. Mention the classification of fuels with examples. **(C.O.NO.2) [Comprehension Level]**

15. Explain the principle involved in capturing geothermal energy. **(C.O.NO.2) [Comprehension Level]**

16. Explain the principle involved in Li-MnO2 battery. **(C.O.NO.1) [Comprehension Level]**

17. We can convert energy available from the sources like sun, air, water, fossils, heat trapped beneath the earth’s crust, biodegradable wastes and radioactive elements to useable form such as heat or electricity. Name each type of energy and identify whether it is renewable or non-renewable form. **(C.O.NO.3) [Application Level]**

18. In what way batteries are different from supercapacitors? Explain.

**(C.O.NO.3) [Application Level]**

19. Write a note on environmental aspects of energy utilization.

**(C.O.NO.1) [Comprehension Level]**

**Part C [Problem Solving Questions]**

**Answer ANY TWO Questions. Each question carries 15 marks. (2Qx15M=30M)**

21) (a) Batteries are made up of different components with specific role to play. Name each component and their function. [6 M]

(b) Explain the cell reaction and construction with characteristics associated with Lead acid battery. [9 M] **(C.O.No. 1) [Application]**

22) (a) Name and explain the principle involved in the type of renewable energy which is associated with solar cells. [9 M]

(b) Explain the reasoning behind our dependency on non-renewable energy sources even though they have serious environmental concerns. [6 M]

**(C.O.NO.3) [Application Level]**

23) Name the type of fuel with examples which are obtained from buried dead plants and animals in the limited availability of oxygen over the period of millions of years. Discuss the importance and consequences of the same.  **(C.O.NO.1) [Knowledge Level]**