**A** **Reg. No. :** | | | | | | | | | | |

**Question Paper Code: 59371**

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Open elective

Civil Engineering

15UEE971 - NON CONVENTIONAL ENERGY RESOURCES AND APPLICATIONS

(Common to CSE, ECE, MECH, EIE ,IT and Chemical Engineering branches)

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. Extraction of mineral and metal form the earth is: CO1- R

   (a) Agriculture (b) Transportation (c) Mining (d) Sustainable development

2. The major cause for land degradation in our country is CO1- R

   (a) Soil erosion (b) Pollution of soil (c) Water-logging (d) None of the above

3. Which of the following solar cookers is the most efficient and has the shortest cooking time? CO2- R

   (a) Box cooker (b) Parabolic cooker

   (c) Panel cooker (d) Cardboard type cooker

4. Common energy source in Indian villages is: CO2- R

   (a) Electricity (b) Coal (c) Sun (d) Wood and animal dung

5. The installed capacity of wind energy in India is about CO3- R

   (a) 8000 MW (b) 1500 MW (c) 6000MW (d) 4000 MW

6. Tidal energy utilizes CO3- R

   (a) Kinetic energy of water (b) Potential energy of water

   (c) Both (a) and (b) (d) None of these

7. Energy sources that can be continually produced and have few negative side effects are known as: CO4- R

(a) Renewable Energy Sources (b) Nonrenewable Energy Sources

(c) No such sources exist (d) Man Made Energy Sources

8. Boiling water reactor and pressurised water reactors are: CO4- R

(a) Nuclear reactor (b) Solar reactor (c) OTEC (d) Biogas reactor

9. As wave travels, intensity CO5- R

(a) Increases (b) Remains same (c) Decreases (d) Varies

10. Which of the following is a disadvantage of most of the renewable energy sources? CO5-R

(a) Highly polluting (b) High waste disposal cost

(c) Unreliable supply (d) High running cost

PART – B (5 x 2= 10 Marks)

11. Mention the present contribution of different types of plants in India CO1- U

12. Mention the solar cell conversion efficiency and output power. CO2- U

13. What do you understand by wind data? CO3- U

14. How the fermentation process is carried out? CO4- U

15. Interpret the main hurdles in the development of tidal energy? CO5- U

PART – C (5 x 16= 80 Marks)

16. (a) Describe the various aspects of energy Conservation CO1- U (16)

Or

(b) Write about the availability energy consumption Pattern in India CO1- U (16)

17. (a) Draw and explain the Solar heating systems with neat sketch CO2-U (16)

Or

(b) Draw and explain the design principles and construction details of a box –type solar cooker CO2-U (16)

18. (a) List out the types of wind energy systems and explain the their working principles with neat diagram. CO3-U (16)

Or

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|---|---|---|---|---|
| | (b) | Write a short notes on safety and environmental aspects of wind energy. | CO3-U | (16) |
| 19. | (a) | Draw and explain the fixed dome type digester biogas plant. | CO4- U | (16) |
| | | Or | | |
| | (b) | Write a short notes on<br>(i) Co-generation of bio-mass<br>(ii) Digestion process used in Bio-gas generation. | CO4- U | (16) |
| 20. | (a) | Draw and explain the typical arrangements of small hydro power station. | CO5- U | (16) |
| | | Or | | |
| | (b) | Sketch the block diagram of a fuel cell power plant and explain the details of each block. | CO5- U | (16) |