| Reg. No. | | | | | | | | | | | | |
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| Question Paper Code | 12294 |
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**B.E. / B.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023**

Sixth Semester

**Mechanical Engineering**

**20MEEL601 - RENEWABLE ENERGY SOURCES**

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

| | | *Marks, K-Level, CO* |
|---|---|---|
| 1. | Define the terms Zenith angle. | *2,K1,CO1* |
| 2. | List most commonly used conventional energy sources. | *2,K1,CO1* |
| 3. | List the major drawbacks to the extensive application of solar energy. | *2,K1,CO2* |
| 4. | What are Pyranometers and Pyrheliometers? | *2,K1,CO2* |
| 5. | What are the components of wind mill? | *2,K1,CO3* |
| 6. | What is geothermal power? | *2,K1,CO4* |
| 7. | What are the classifications of geo thermal fields? | *2,K1,CO4* |
| 8. | What is meant by biomass energy and biomass energy resource? | *2,K1,CO5* |
| 9. | List out different types of Batteries. | *2,K1,CO6* |
| 10. | What are the common problems associated with lead acid batteries? | *2,K1,CO6* |

**PART - B (5 × 16 = 80 Marks)**

Answer Any Five Questions

| | | |
|---|---|---|
| 11. | (i) Explain the prospects of Non-conventional energy sources in India. | *8,K2,CO1* |
| | (ii) Summarize the conventional and unconventional energy sources. Describe briefly. | *8,K2,CO1* |
| 12. | How solar air collector is classified? What are the main applications of driers? | *16,K2,CO2* |
| 13. | Draw schematic of heliostat based solar thermal power plant and explain the concept of generation of electric power. | *16,K3,CO2* |
| 14. | (i) Elaborate about the type of generator used in wind power plant. | *8,K2,CO3* |
| | (ii) Classify wind mills. | *8,K2,CO3* |
| 15. | Explain the working of Flywheel energy storage. | *16,K2,CO4* |
| 16. | Sort out various factors affecting bio digestion of a gas. | *16,K2,CO5* |
| 17. | Examine in detail about the photovoltaic energy conversion. | *16,K2,CO6* |
| 18. | Explain in detail about the fuel cells. | *16,K2,CO6* |