UE18ME101: MECHANICAL ENGINEERING SCIENCES (4-0-0-4-4)

QUESTION

Unit 1 - Energy Sources and Power Generation

1. How is per capita income related to standard of living?
2. Write a brief note on oil crisis 1973
3. What are primary and secondary energy sources?
4. What are Conventional and non-conventional sources?
5. List various non conventional energy sources. Give their availability and relative merits.
6. List advantages and drawbacks of renewable energy sources.
7. What is commercial energy?
8. Write a brief note on non-conventional energy sources with reference to Indian energy scenario.
9. Write a brief note on Indian constitutional policies with regard to renewable energy sources
10. What is green house effect? Mention reasons and consequences.
11. Define green power.
12. What are the prospects of solar energy in India? List possible applications
13. What are the prospects of wind energy in India? List possible applications
14. What are the prospects of tidal energy in India? List possible applications
15. What are the prospects of wave energy in India? List possible applications
16. What are the prospects of biomass energy in India? List possible applications
17. What are the prospects of hydro electric energy in India? List possible applications
18. What are the prospects of micro hydro energy in India? List possible applications
19. Explain wind energy conversion systems.
20. Describe operation of a thermal power plant with a neat schematic
21. Describe operation of hydroelectric and nuclear power plants.
22. Define system, surroundings and boundary.
23. Distinguish between closed, open and isolated systems
24. Mention the different types of thermodynamic boundaries.
25. What is a thermodynamic process? What is a quasi-static process?
26. State the three laws of thermodynamics. Discuss their significance.
27. Distinguish between heat and work.
28. What is the difference between work and power? What are SI units?
29. What is the heating value of a fuel?
30. A lawn mower engine is started by pulling a cord wrapped around a hub of radius 6.0 cm. If a constant tension of 80 N is maintained in the cord and the hub makes three revolutions before the motor starts, how much work is done?
31. In the movie Back to the Future, Doc Brown and the young Marty McFly need 1.21 GW of power for their time machine.
    (a) Convert that power requirement to horsepower.
    (b) If a stock DeLorean sports car produces 145 hp, how many times more power does the time machine need?