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Question Paper Code: 49072

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2017

Sixth Semester

Mechanical Engineering

14UME906 - RENEWABLE SOURCES OF ENERGY

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. A cylindrical parabolic concentrator requires:
 - (a) 2-axes tracking
 - (b) 1-axis tracking
 - (c) No tracking
 - (d) Seasonal adjustment only
2. Which of the following is not a primary energy source?
 - (a) Oil
 - (b) Natural Gas
 - (c) Electricity
 - (d) Wood
3. If band gap of solar cell material increases, then:
 - (a) Its open circuit voltage increases
 - (b) Its open circuit voltage decreases
 - (c) Its open circuit voltage remains unchanged
 - (d) Its reverse saturation current increase
4. Greenhouse effect refers to increase in
 - (a) Global temperature
 - (b) Carbon monoxide
 - (c) Atmospheric pressure
 - (d) Greenery
5. The air density at standard condition at sea level is about:
 - (a) 1.855 kg/m³
 - (b) 2.555 kg/m³
 - (c) 1.226 kg/m³
 - (d) 3.267 kg/m³

6. Ratio of maximum demand to connected load is termed as
 (a) Load factor (b) Power factor
 (c) Demand factor (d) Form factor
7. Biomass is predominantly:
 (a) Hydrogen (b) Carbon monoxide (c) Carbon dioxide (d) Methane
8. In the equation, Energy consumed = C + (M x Production), where 'C' is
 (a) Variable energy consumption (b) Fixed energy consumption
 (c) Specific energy Consumption (d) None of these
9. Specific energy Consumption can be expressed in which of the following units.
 (a) Tone/Kwh (b) KCal/Kg (c) Kcal/Kwh (d) None of these
10. The temperature at the inner core of the earth is about:
 (a) 1000° C (b) 4000° C (c) 4000° C (d) 500° C

PART - B (5 x 2 = 10 Marks)

11. What are primary and secondary energy sources?
12. What is the type of generator used in wind power plant?
13. What is a greenhouse gases?
14. Discuss the disadvantages of geothermal plant.
15. List out the advantages of fuel cell.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain with a neat sketch the working principle of standalone and grid connected solar system. (16)

Or

- (b) (i) Explain the depletion process of solar radiation as it passes through the atmosphere to reach at the surface of the earth. (8)
- (ii) Describe the flat plate collector with the help of a suitable diagram. (8)

17. (a) Briefly Explain about the horizontal wind mills with neat sketch. (16)
- Or
- (b) Explain the principle and application of wind electric system. State the basic components and their working in wind electric system. (16)
18. (a) (i) What are the factors affecting the performance of biogas digester? (8)
- (ii) Explain different types of bio-fuels. (8)
- Or
- (b) (i) Write about energy from biomass. (8)
- (ii) Write about energy from biogas. (8)
19. (a) Explain with neat sketch, the methods of operation of tidal power generation. (16)
- Or
- (b) (i) Describe various stages of exploration and development of geothermal resources. (8)
- (ii) What are the environmental impacts of geothermal energy? (8)
20. (a) (i) Explain the principle of operation of alkaline fuel oil. (6)
- (ii) Draw a conceptual block diagram of a fuel cell power plant and explain the details of each block. (10)
- Or
- (b) Explain the construction and working principle of fuel cell with neat sketch. (16)
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