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Question Paper Code: 49706

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Elective

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)

- Which of the following is not a primary energy source?
(a) Oil (b) Natural Gas (c) Electricity (d) Wood
- Which of the following is a renewable energy source?
(a) Bitumen (b) Solar Energy (c) Coal (d) Natural Gas
- At present the share of hydro power in the country's total generated units is around
(a) 20% (b) 25% (c) 30% (d) 35%
- Greenhouse effect refers to increase in
(a) Global temperature (b) Carbon monoxide
(c) Atmospheric pressure (d) Greenery
- Ratio of maximum demand to connected load is termed as
(a) Load factor (b) Power factor
(c) Demand factor (d) Form factor
- The objective of energy management is
(a) To minimize energy costs (b) To minimize environmental effects
(c) Both (a) and (b) (d) None of these

7. A mass balance for energy conservation does not consider which of the following
 (a) steam (b) water (c) raw materials (d) lubricating oil
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. The quantity of heat required to raise 1 kg of a substance by 1°C is known as
 (a) sensible heat (b) specific heat (c) latent heat (d) calorie
10. Wave energy is basically harnessed in the form of:
 (a) thermal energy (b) chemical energy
 (c) mechanical energy (d) electrical energy

PART - B (5 x 2 = 10 Marks)

11. Give three types of solar energy collectors.
12. What is the type of generator used in wind power plant?
13. Write any two items used as biomass fuels.
14. Compare floating drum with fixed dome.
15. List out the advantages of fuel cell.

PART - C (5 x 16 = 80 Marks)

16. (a) (i) Explain the depletion process of solar radiation as it passes through the atmosphere to reach at the surface of the earth. (08)
 (ii) Describe the flat plate collector with the help of a suitable diagram. (08)

Or

- (b) (i) With the help of schematic diagram explain the working of solar thermal water pump (8)
 (ii) Describe the flat plate collector with the help of a suitable diagram. (8)

17. (a) Explain briefly about the horizontal wind mills with neat sketch. (16)

Or

(b) With the help of a diagram indicate the circulation of global winds. What are the forces responsible for determining the speed and direction of global winds? (16)

18. (a) (i) Write about energy from biomass. (8)

(ii) Write about energy from biogas. (8)

Or

(b) (i) What are the factors affecting biogas generation? (8)

(ii) Write short note on bio energy by burning plants. (8)

19. (a) What are the main types of OTEC power plants? Describe their working in brief. (16)

Or

(b) What types of sites are considered suitable for wave power development?. (16)

20. (a) (i) Explain the construction and working principle of fuel cell with neat sketch. (8)

(ii) Explain the principle of operation of alkaline fuel oil. (8)

Or

(b) Draw a conceptual block diagram of a fuel cell power plant and explain the details of each block. (16)
