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**Question Paper Code: 49706**

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Elective

Mechanical Engineering

14UME906 - RENEWABLE SOURCES OF ENERGY

(Regulation 2014)

Duration: 1.15 hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

**(Answer any six of the following questions)**

1. Terrestrial radiation has a wavelength in the range of:  
(a)  $0.2\mu\text{m}$  to  $4\mu\text{m}$  (b)  $0.2\mu\text{m}$  to  $0.5\mu\text{m}$   
(c)  $0.380\mu\text{m}$  to  $0.760\mu\text{m}$  (d)  $0.29\mu$  to  $2.3\mu\text{m}$
2. A cylindrical parabolic concentrator requires:  
(a) 2-axes tracking (b) 1-axis tracking  
(c) no tracking (d) seasonal adjustment only
3. A solar cell is basically:  
(a) a voltage source, controlled by flux of radiation  
(b) current source, controlled by flux of radiation  
(c) an uncontrolled current source  
(d) an uncontrolled voltage source
4. At present the share of hydro power in the country's total generated units is around  
(a) 20% (b) 25% (c) 30% (d) 35%

5. Ratio of maximum demand to connected load is termed as
- (a) Load factor (b) Power factor  
(c) Demand factor (d) Form factor
6. 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. Biomass is predominantly:
- (a) hydrogen (b) carbon monoxide (c) carbon dioxide (d) methane
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. 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

PART – B (3 x 8= 24 Marks)

**(Answer any three of the following questions)**

11. Explain the depletion process of solar radiation as it passes through the atmosphere to reach at the surface of the earth. (8)
12. Discuss and explain the horizontal wind mills with neat sketch. (8)
13. Write about energy from biomass. (8)
14. What are the main types of OTEC power plants? Describe their working in brief. (8)
15. Explain the construction and working principle of fuel cell with neat sketch. (8)

