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**Reg. No. :**

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**Question Paper Code: 59708**

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Elective

Mechanical Engineering

15UME908- RENEWABLE SOURCES OF ENERGY

(Regulation 2015)

Duration: Three Hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Harmful radiation emitted by the sun is \_\_\_\_\_. CO1- R  
(a) visible                      (b) infra-red                      (c) ultra-violet                      (d) radio waves
- A liquid flat plate collector is usually held tilted in a fixed position, CO1- R  
facing \_\_\_\_\_ if located in the northern hemisphere.  
(a) East                      (b) West                      (c) North                      (d) South
- A substance which produces a lot of heat on burning is called CO2- R  
\_\_\_\_\_.  
(a) oxidising agent                      (b) biogas                      (c) biomass                      (d) fuel
- The amount of energy available in the wind at any instant is CO2- R  
proportional to \_\_\_\_\_ of the wind speed.  
(a) Square rootpower of two                      (b) Square root power of three  
(c) Square power                      (d) Cube power
- Write the advantages of renewable energy resources CO3- R  
(a) Pollution free                      (b) Inexhaustible                      (c) always available                      (d) all of these
- Which of the following is not used to produce bio-diesel? CO3- R  
(a) Jetropha                      (b) Karanj                      (c) White gram                      (d) Kusum

7. Difference in levels of ocean water between a high tide and low tide is called \_\_\_\_\_. CO4- R  
 (a) Tidal average (b) Tidal range (c) Neap tide (d) Spring tide
8. The source of energy of the sun is \_\_\_\_\_. CO4- R  
 (a) nuclear fission (b) chemical reaction (c) nuclear fusion (d) photoelectric effect
9. What are the two most common ways to produce hydrogen gas used in fuel cells? CO5- R  
 (a) Electromagnetism and quantum mechanics (b) Steam reforming and electrolysis  
 (c) Electrolysis and absorption (d) Thermal conductivity and refraction
10. A solar cell is made up of \_\_\_\_\_. CO5- R  
 (a) silicon (b) titanium  
 (c) magnesium (d) teflon

PART – B (5 x 2= 10Marks)

11. Different applications of Solar PV system in rural area. CO1- R
12. Types of generators used in wind power plant. CO2- R
13. Compare biogas and biomass. CO3- R
14. Write the advantages of renewable energy resources. CO4- R
15. Classify biomass gasifier. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Explain in detail the flat plate solar collector. Mention the advantages of flat plate collector. CO1 - U (16)  
 Or  
 (b) Explain the working principle of pyrometer used for measuring global radiation with suitable sketch. CO1 - U (16)
17. (a) Explain the basic components of the wind energy conversion system (WECS). And Discuss the advantages and disadvantages of WECS. CO2 - U (16)  
 Or  
 (b) Explain briefly about the horizontal axis wind mills with neat sketch CO2 - U (16)

18. (a) Sketch and explain the working principle of floating type biogas plant. CO3 - U (16)
- Or
- (b) Explain the processes involved in the ethanol production from sugar cane. CO3 - U (16)
19. (a) Explain the working principle of small hydro power station with neat sketch. CO4 - U (16)
- Or
- (b) Explain with sketches the various methods of tidal power generation and also State the merits and demerits of tidal power generation. CO4 - U (16)
20. (a) Explain briefly the potential of renewable energy sources in India. and also the State the advantages of renewable energy sources CO5 - U (16)
- Or
- (b) Classify fuel cell and also the Explain the working principle of fuel cell with neat sketch. CO5 - U (16)

