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Question Paper Code: 59708

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

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)

1. It is the vertical angle between the projection of the sun rays on the horizontal plane and the direction of sun rays CO1- R
(a) Altitude angle (b) Zenith angle (c) Hour Angle (d) Solar angle
2. A liquid flat plate collector is usually held tilted in a fixed position, facing _____ if located in the northern hemisphere. CO1- R
(a) East (b) West (c) North (d) South
3. The wind intensity can be described by . CO2- R
(a) Reynolds number (b) Mach number (c) Beaufort number (d) Froude number
4. The amount of energy available in the wind at any instant is proportional to _____ of the wind speed. CO2- R
(a) Square rootpower of two (b) Square root power of three
(c) Square power (d) Cube power
5. Bio energy derived from CO3- R
(a) Solar radiation (b) Wind mill (c) Plants & Animal Waste (d) None of the above
6. 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. A body of water which rushes through narrow bay during rise of high tide is called CO4- R
- (a) Tidal Average (b) Tidal Range (c) Tidal Bore (d) Tidal Energy
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. The main issue about hydrogen as an alternative energy source is: CO5- R
- (a) Its destructive capacity (b) Process of separating it from other elements
(c) The cost of refinement (d) Its large mass

PART – B (5 x 2= 10Marks)

11. List the advantages of concentrating solar collector over flat plate collector CO1- R
12. Classify wind power plants. CO2- R
13. Classify the Bio-gas plants. CO3- R
14. Write down the difficulties in tidal power developments CO4- R
15. List some applications of fuel cells. CO5- R

PART – C (5 x 16= 80Marks)

16. (a) Discuss the basic photovoltaic system integrated with power grid with neat sketch and list out the applications. CO1 - U (16)
- Or
- (b) Explain the principle of solar photovoltaic power generation and mention its advantage and disadvantage of solar photo voltaic conversion system. CO1 - U (16)
17. (a) Analyze the factors which are involving the performance of horizontal axis type wind mill and explain its working with neat sketch. CO2 - U (16)
- Or
- (b) Describe the main applications of wind energy, giving neat sketches. CO2 - U (16)
18. (a) List down the factors affecting biodigestion and explain in detail. CO3 - U (16)
- Or

- (b) How bio-diesel is obtained? State the merits over ordinary diesel fuel. CO3 - U (16)
19. (a) Enumerate the methods of Ocean Thermal Electric Power Generation CO4 - U (16)
- Or
- (b) Explain the methods of operation of tidal power generation in detail. CO4 - U (16)
20. (a) Discuss the methods Hydrogen production by Hybrid processes CO5 - U (16)
- Or
- (b) Describe the principle of working of a fuel cell with reference to $H_2 - O_2$ cell. CO5 - U (16)

