Reg. No. : | | | | | | | | | | |

Question Paper Code: 49304

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

Elective

Electrical and Electronics Engineering

14UEE904 – NON- CONVENTIONAL ENERGY RESOURCES

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 1 = 10 Marks)

1. Out of the following which one is conventional sources of energy
   (a) Wind energy (b) fossil fuels
   (c) solar energy (d) biomass energy
2. The world's most abundant fossil fuel is
   (a) Natural Gas (b) Methane (c) Biodiesel (d) Coal
3. Which is the most common material used in making solar cells?
   (a) Silver (b) Aluminum (c) Silicon (d) Iron
4. Solar energy travels through space by the process of
   (a) Conduction (b) Radiation (c) Convection (d) Transportation
5. Power output from a wind energy electric generator is directly proportional to
   (a) Square root of wind velocity (b) Cube of wind velocity
   (c) Square of wind velocity (d) Wind velocity
6. An anemometer is an instrument used for measurement of
   (a) Solar radiation (b) Temperature gradient

(c) Wind speed (d) Depth in ocean

7. Gasification of biomass is a

(a) Biochemical conversion process (b) Thermo chemical conversion process
(c) Chemical conversion process (d) Biological conversion process

8. In rural areas, the locally generated gas from cow dung used for cooking & lighting is called
(a) Ammonia (b) Carbon dioxide (c) Biogas (d) Oxygen

9. The overall efficiency of an OTEC power plant is
(a) 10-15% (b) 2-3 % (c) 25-40% (d) More than 50 %.

10. The tidal waves are caused by the periodic rise and fall of oceans. It is associated with the position of
(a) Sun (b) Sea (c) Earth (d) Moon

PART - B (5 x 2 = 10 Marks)

11. List the percentage use of various sources for the total energy consumption in the world.

12. Define solar time constant.

13. Define the term " mean wind velocity"

14. State the constituents of biogas.

15. Explain the basic principle of an ocean thermal energy conversion system.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain briefly the different types of non-conventional sources of energy (16)

Or

(b) Briefly discuss the environmental aspects of energy utilization worldwide. (16)

17. (a) (i) Discuss the principle of operation of a solar cooker. (8)

(ii) List the various applications of solar energy. Also explain any one application, which is economically viable in present context. (8)

Or

(b) With a neat block diagram, explain the working of a solar photovoltaic power generation system. (16)

18. (a) Describe the components of a wind energy conversion system with a neat diagram. (16)

Or

(b) Discuss any three factors that determine the power output from a wind energy generator. (16)

19. (a) Discuss the various steps involved in the production of ethanol from biomass with a neat schematic diagram. (16)

Or

(b) What is biomass? Why biomass is treated as a renewable energy source? Also list the various applications of biomass. (16)

20. (a) With a neat schematic diagram, explain the working of a geothermal power plant. (16)

Or

(b) (i) Explain the principle of harnessing energy from tides. Also mention its limitations. (8)

(ii) Describe the working of any one type of wave energy conversion machine in detail. (8)

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