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**UNIVERSITY**

(Karunya Institute of Technology & Sciences)

(Declared as Deemed-to-be University under Sec.3 of the UGC Act, 1956)

Reg.No. \_\_\_\_\_\_\_\_\_\_\_\_\_

**End Semester Examination – Nov/Dec - 2016**

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|  |  | **Semester :** | **2016-17 ODD** |
| **Code :** | **10EE203/12EE240** | **Duration :** | **3 hrs** |
| **Sub. Name :** | **Renewable Energy Sources** | **Max. marks :** | **100** |

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| **Q. No** | **Questions** | | | | | **Marks** | |
| **PART-A(10X1=10 MARKS)** | | | | | | | |
| 1. | Mention the basic instruments available for measurement of solar radiation. | | | | | (1) | |
| 2. | Define Solar Constant. | | | | | (1) | |
| 3. | What is meant by Betz limit? | | | | | (1) | |
| 4. | Define Tip-speed ratio. | | | | | (1) | |
| 5. | How are biogas plants classified? | | | | | (1) | |
| 6. | What is pyrolysis? | | | | | (1) | |
| 7. | How is liquid hydrogen transported? | | | | | (1) | |
| 8. | List the types of fuel cells. | | | | | (1) | |
| 9. | What is meant by OTEC? | | | | | (1) | |
| 10. | Mention any two basic kinds of geothermal source? | | | | | (1) | |
| **PART B(5 X 3= 15 MARKS)** | | | | | | |
| 11. | | Write a short note on solar distillation. | | | (3) | |
| 12. | | Classify the wind energy conversion system (WECS)? | | | (3) | |
| 13. | | What is gasification? Give the composition of producer gas on volumetric basis. | | | (3) | |
| 14. | | Write a short note on hydrogen transportation? | | | (3) | |
| 15. | | What are the difficulties in tidal power developments? | | | (3) | |
| **PART C(5 X 15= 75 MARKS)** | | | | | | |
| 16. | |  | Discuss in details about different types of solar collectors (Flat Plate) with neat sketches. | (15) | | |
| (OR) | | | | | | |
| 17. | |  | With a neat sketch explain the working principle of photovoltaic cell? What are the applications of photovoltaic system? | (15) | | |
| 18. | | a. | Describe the main considerations in selecting a site for wind mills. | (8) | | |
| b. | Draw the block diagram of wind energy conversion system (WECS) and indicate the basic components of WECS. | (7) | | |
| (OR) | | | | | | |
| 19. | | a. | Discuss the advantages and disadvantages of wind energy conversion systems. | (8) | | |
| b. | Describe any one vertical axis type wind mill. | (7) | | |
| 20. | |  | What is meant by anaerobic digestion? What are the factors which affect bio-digestion?  Explain briefly. | (15) | | |
| (OR) | | | | | | |
| 21. | |  | Briefly explain about the classification of biomass gasifier with the help of a neat diagram. | (15) | | |
| 22. | | a. | Explain how hydrogen is produced by Electrolysis Method. | (8) | | |
| b. | Discuss the various methods of hydrogen storage. | (7) | | |
| (OR) | | | | | | |
| 23. | |  | What is a fuel cell? Describe the principle of working of a fuel cell with reference to H2- O2 cell. | (15) | | |
| 24. | |  | Describe the closed cycle OTEC system with, with its advantages over open cycle system. | (15) | | |
| (OR) | | | | | | |
| 25. | |  | Describe the different types of turbines are in use for small scale hydroelectric plants. | (15) | | |

ALL THE BEST