CBCS SCHEME

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BETCK205E/BETCKE205

# Second Semester B.E./B.Tech. Degree Supplementary Examination, June/July 2024

## Renewable Energy Sources

Time: 3 hrs. Max. Marks: 100

***Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.***
***2. M : Marks , L: Bloom's level , C: Course outcomes.***

| | | Module – 1 | M | L | C |
|---|---|---|---|---|---|
| Q.1 | a. | Explain the importance of renewable energy in sustainable development. | 06 | L2 | CO1 |
| | b. | Distinguish between Renewable and Non-renewable energy sources. | 08 | L2 | CO1 |
| | c. | Write a brief note on Oil-Shale. | 06 | L2 | CO1 |
| | | **OR** | | | |
| Q.2 | a. | Discuss the different ways of the classification of Energy Resources. | 06 | L2 | CO1 |
| | b. | What is Internet of Energy (IoE) and discuss its importance in the power system? | 08 | L2 | CO1 |
| | c. | Discuss the causes of energy scarcity and solution to the energy crisis. | 06 | L2 | CO1 |
| | | **Module – 2** | | | |
| Q.3 | a. | Explain the V-I characteristics of Solar Cell. | 06 | L2 | CO2 |
| | b. | With neat diagram explain the working of pyrhelio-meter to measure beam radiation. | 06 | L2 | CO2 |
| | c. | What is Solar Pond? With suitable diagram explain its working principle. | 08 | L2 | CO2 |
| | | **OR** | | | |
| Q.4 | a. | Explain Balance of System (BoS). | 06 | L2 | CO2 |
| | b. | With a neat diagram explain the solar radiation at the earth surface. | 08 | L2 | CO2 |
| | c. | Discuss the advantages and disadvantages of solar photovoltaic system. | 06 | L2 | CO2 |
| | | **Module – 3** | | | |
| Q.5 | a. | Discuss the classification of wind energy conversion system. | 06 | L2 | CO3 |
| | b. | With a block diagram, explain the basic components of a wind energy conversion system. | 08 | L2 | CO3 |
| | c. | Explain the construction and working of fixed dome type bio-gas plant. | 06 | L2 | CO3 |
| | | **OR** | | | |
| Q.6 | a. | With a neat block diagram, explain the process of Urban Waste to energy conversion. | 08 | L2 | CO3 |
| | b. | What are the different types of Bio-mass feed stocks used for energy generation and explain their composition and availability. | 06 | L2 | CO3 |
| | c. | With suitable diagram, explain the construction and working of Savonius Wind turbine. | 06 | L2 | CO3 |
| | | **Module – 4** | | | |
| Q.7 | a. | With a neat block diagram explain the working of open cycle OTEC system. | 08 | L2 | CO4 |
| | b. | Discuss the major problems associated with OTEC plants. | 06 | L2 | CO4 |
| | c. | List the advantages and disadvantages of Tidal power as a renewable energy source. | 06 | L1 | CO4 |
| | | **OR** | | | |
| Q.8 | a. | With a suitable diagram explain single basin and two basin system of tidal power harnessing. | 08 | L2 | CO4 |
| | b. | List the advantages and disadvantages of wave energy. | 06 | L1 | CO4 |
| | c. | List the advantages, disadvantages and benefits of OTEC. | 06 | L1 | CO4 |

| | | Module – 5 | | | |
|---|---|---|---|---|---|
| Q.9 | a. | With a neat block diagram, explain the operating principle of fuel cell. | 08 | L2 | CO5 |
| | b. | List the advantages and disadvantages of fuel cell. | 06 | L1 | CO5 |
| | c. | Discuss the problems associated with hydrogen energy usage. | 06 | L2 | CO5 |
| | | OR | | | |
| Q.10 | a. | With a neat diagram, explain the electrolysis method used to produce hydrogen. | 08 | L2 | CO5 |
| | b. | Discuss the applications of hydrogen energy. | 06 | L2 | CO5 |
| | c. | What are the factors, which affects the performance of fuel cell? | 06 | L2 | CO5 |

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