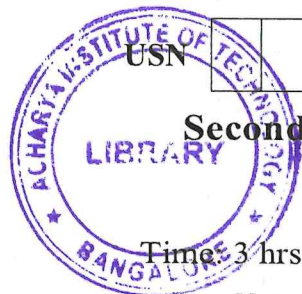


# CBCS SCHEME



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BETCK205E

## Second Semester B.E./B.Tech. Degree Examination, June/July 2026 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 need for renewable energy sources.                                                |  | 07 | L1 | CO1 |
|            | b. | Discuss India and Worldwide renewable energy availability.                                    |  | 06 | L2 | CO1 |
|            | c. | Briefly discuss about Internet of Energy (IoE).                                               |  | 07 | L2 | CO1 |
| OR         |    |                                                                                               |  |    |    |     |
| Q.2        | a. | Compare renewable and non-renewable energy sources.                                           |  | 06 | L2 | CO1 |
|            | b. | Brief about principle of ocean thermal energy.                                                |  | 06 | L1 | CO1 |
|            | c. | Explain with neat sketch, construction and working of geothermal energy power plant.          |  | 08 | L2 | CO1 |
| Module – 2 |    |                                                                                               |  |    |    |     |
| Q.3        | a. | Briefly explain about Solar Energy.                                                           |  | 06 | L1 | CO2 |
|            | b. | With a neat diagram , explain the construction and working of Pyrheliometer.                  |  | 06 | L2 | CO2 |
|            | c. | With a neat diagram , explain the working of solar pond electric power plant.                 |  | 08 | L2 | CO2 |
| OR         |    |                                                                                               |  |    |    |     |
| Q.4        | a. | With a neat diagram , explain the working of Sunshine Recorder.                               |  | 07 | L2 | CO2 |
|            | b. | With neat sketch , explain about Solar distillation process .                                 |  | 07 | L2 | CO2 |
|            | c. | Brief about (i) Beam radiation (ii) Diffuse radiation (iii) Solar constant                    |  | 06 | L1 | CO2 |
| Module – 3 |    |                                                                                               |  |    |    |     |
| Q.5        | a. | With a block diagram , explain the working of wind energy conversion system.                  |  | 08 | L2 | CO3 |
|            | b. | Explain the classification of wind energy conversion system.                                  |  | 06 | L2 | CO3 |
|            | c. | Compare horizontal axis and vertical axis wind turbine, in terms of construction and working. |  | 06 | L3 | CO3 |

OR

|     |    |                                                                  |    |    |     |
|-----|----|------------------------------------------------------------------|----|----|-----|
| Q.6 | a. | With a neat sketch, explain the working of fixed dome digester.  | 07 | L2 | CO3 |
|     | b. | With a sketch, discuss the working of downdraft gassifier.       | 07 | L2 | CO3 |
|     | c. | Explain the role of photosynthesis process in energy plantation. | 06 | L3 | CO3 |

## Module – 4

|     |    |                                                              |    |    |     |
|-----|----|--------------------------------------------------------------|----|----|-----|
| Q.7 | a. | With a neat diagram, explain double basin tidal power plant. | 08 | L2 | CO4 |
|     | b. | Explain advantages and limitations of wave energy.           | 06 | L2 | CO4 |
|     | c. | Explain tides as energy suppliers and their mechanics.       | 06 | L2 | CO4 |

OR

|     |    |                                                               |    |    |     |
|-----|----|---------------------------------------------------------------|----|----|-----|
| Q.8 | a. | Explain with a neat sketch, the working of OTEC power plants. | 08 | L2 | CO4 |
|     | b. | Explain about problems associated with OTEC.                  | 07 | L1 | CO4 |
|     | c. | Differentiate between open cycle OTEC and closed cycle OTEC.  | 05 | L2 | CO4 |

## Module – 5

|     |    |                                                                      |    |    |     |
|-----|----|----------------------------------------------------------------------|----|----|-----|
| Q.9 | a. | What is Fuel Cell? Classify fuel cells.                              | 06 | L2 | CO5 |
|     | b. | Explain the working of Hydrogen-Oxygen fuel cell with a neat sketch. | 08 | L2 | CO5 |
|     | c. | Explain the benefits of hydrogen energy.                             | 06 | L1 | CO5 |

OR

|      |    |                                                                                               |    |    |     |
|------|----|-----------------------------------------------------------------------------------------------|----|----|-----|
| Q.10 | a. | Explain with a neat sketch, electrolysis method for hydrogen production.                      | 07 | L2 | CO5 |
|      | b. | Briefly explain applications of hydrogen energy and problems associated with hydrogen energy. | 07 | L2 | CO5 |
|      | c. | Explain about any 2 hydrogen storage methods.                                                 | 06 | L1 | CO5 |

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