



# Faculty of Engineering

## End Semester Examination May 2025

### OE00036 Renewable Sources of Energy

<b>Programme</b>	: B.Tech.	<b>Branch/Specialisation</b>	: All
<b>Duration</b>	: 3 hours	<b>Maximum Marks</b>	: 60

**Note:** All questions are compulsory. Internal choices, if any, are indicated. Assume suitable data if necessary. Notations and symbols have their usual meaning.

#### Section 1 (Answer all question(s))

Marks CO BL

**Q1.** Which of the following is a primary energy resource?

1 1 1

Rubric	Marks
Sun light	1

- ☒ Sun light
 ☐ Electrical energy  
☐ Chemical energy
 ☐ All of these

**Q2.** Which of the following is not a renewable energy source?

1 1 1

Rubric	Marks
Nuclear	1

- ☐ OTEC
 ☒ Nuclear  
☐ Geothermal
 ☐ Tidal

**Q3.** Which of the following is true in context of concentrating solar collectors?

1 1 1

Rubric	Marks
Solar tracking is required	1

- ☐ Both beam and diffused radiation can be used
 ☒ Solar tracking is required  
☐ Solar tracking is not required
 ☐ All of these

**Q4.** Which of the following is not a type of solar cooker?

1 1 1

Rubric	Marks
None of these	1

- ☐ Direct type
 ☐ Indirect type  
☐ Advanced type
 ☒ None of these

**Q5.** Which is the process in which energy is produced using the heat trapped inside the earth surface?

1 1 1

Rubric	Marks
Geothermal Energy conversion	1

- ☒ Geothermal energy conversion
 ☐ Hydrothermal energy conversion  
☐ Solar energy conversion
 ☐ Tidal energy conversion

**Q6.** Which of the following is a type of wind turbine?

1 1 1

Rubric	Marks
Both Vertical axis and horizontal axis wind turbine	1

- ☐ Vertical axis wind turbine
 ☐ Horizontal axis wind turbine  
☒ Both (A) and (B)
 ☐ None of these

**Q7.** Which of the following is produced using the biomass?

1 1 1

Rubric	Marks
Biochemical	1

- ☒ Biochemical
 ☐ Fuel  
☐ Fibre
 ☐ All of these

**Q8.** Which of the following is not present in producer gas?

1 1 1

Rubric	Marks
Argon	1

- ☐ Carbon mono oxide
 ☐ Carbon di oxide  
☒ Argon
 ☐ Nitrogen

**Q9.** What is the primary source of tidal energy?

1 1 1

Rubric	Marks
Gravitational pull from the Sun and the Moon	1

- ☐ Earth rotation
 ☐ Wind movement  
☐ Solar radiation
 ☒ Gravitational pull from the Sun and the Moon

**Q10.** Which of the following is the major advantage of OTEC?

1 1 1

Rubric	Marks
No green house gas emission	1

- ☐ High energy efficiency
 ☐ No impact on environment  
☒ No green house gas emission
 ☐ Works in all ocean locations

## Section 2 (Answer all question(s))

Marks CO BL

**Q11.** What are the solutions to energy scarcity?

2 1 1

Rubric	Marks
Minimum two solutions = 2 marks	2

**Q12.** Enlist the factors which affect energy resource development.

3 1 1

Rubric	Marks
Minimum three factors = 3 marks	3

**Q13. (a)** Explain in detail about the classification of renewable energy.

5 2 2

Rubric	Marks
Classification = 2 marks	5

(OR)

**(b)** What are the causes of energy scarcity in the world ?

Rubric	Marks
1 mark for each cause	5

**Section 3 (Answer all question(s))**

Marks CO BL

**Q14.** With the help of a neat diagram, explain solar water heating system.

4 2 2

Rubric	Marks
Explanation and Diagram = 4 marks	4

**Q15. (a)** What are different types of solar collectors? Explain any one with neat sketch.

6 2 2

Rubric	Marks
Total = 6 marks	6

(OR)

**(b)** Write informative note on the following:

- Crop drying with solar energy
- Solar cell

Rubric	Marks
Crop drying with solar energy	6

**Section 4 (Answer all question(s))**

Marks CO BL

**Q16.** Enlist factors that should be considered during site selection for installation of wind turbines.

4 2 2

Rubric	Marks
Minimum four factors with explanation = 4 marks	4

**Q17. (a)** Explain in detail the advantages and disadvantages of waste recycling.

6 2 2

Rubric	Marks
6 Marks	6

(OR)

**(b)** Explain a Geothermal system. What are different geothermal resources?

Rubric	Marks
Total = 6 marks	6

**Section 5 (Answer all question(s))**

Marks CO BL

**Q18.** What is the composition of biogas? Explain the production of biogas.

4 2 2

Rubric	Marks
Composition = 1 mark	4

**Q19. (a)** Explain fluidized bed gasifier with a neat sketch.

6 2 2

Rubric	Marks
Explanation = 4 marks	6

(OR)

**(b)** What is biomass gasification? Explain the process involved in gasification.

Rubric	Marks
Gasification = 2 marks	6

**Section 6 (Answer any 2 question(s))**

Marks CO BL

**Q20.** What are different types of ocean thermal energy conversion cycles? Explain any one with a neat sketch.

5 2 2

Rubric	Marks
Types = 1 mark	5

**Q21.** Explain any one method executed for power generation using tidal energy. Sketch diagram in support of your answer.

5 3 3

Rubric	Marks
Diagram = 2 marks	5

**Q22.** With the help of an informative note, demonstrate tidal energy availability and tidal power generation in India.

5 3 3

Rubric	Marks
Tidal energy availability in India	5

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