B. Tech. Examination, 2026

(Even Semester)

NON-CONVENTIONAL ENERGY RESOURCES

Time : Three Hours] *[Maximum Marks : 60*

Note :– Attempt all questions.

SECTION–A

1. Attempt all parts of the following : $1 \times 8 = 8$

   (a) Define solar constant.

   (b) Define wind power density.

   (c) What is OTEC?

   (d) Mention any two limitations of Biomass energy.

   (e) What is geothermal reservoir?

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(f) What is sustainble development?

(g) Define capacity factor of a wind turbine.

(h) List any two environmental benefits of using non-conventional energy sources.

SECTION – B

2. Attempt any two parts of the following . 6×2=12

(a) What are advantages and disadvantages of solar thermal energy systems.

(b) Discuss the construction and working of a horizontal-axis wind turbine.

(c) Explain the problems associated with geothermal conversion.

(d) Discuss the application, advantages and limitation of thermoelectric power systems.

SECTION – C

Note:- Attempt any two parts from each question . All part carry equal marks. 8×5=40

3. (a) Discuss the role of renewable energy is achieving sustainable development goals.

(b) Describe the principle of biomass energy conversion and discuss various biomass technologies.

(c) Calculate radiation on surface normal to beam is case solar system.

Bean radiation on horizontal surface 800 W/m2. Angle of incedance=30°

4. (a) Explain the construction and working of parabolic dish collector.

(b) Explain the process of photosynthesis and its role in biomass energy production.

(c) Discuss the role of biomass energy is rural development.

5. (a) Derive the expression for power available in wind and explain the significance of air density and wind velocity.

(b) Write a detailed note on offshore wind energy systems.

(c) Discuss the efficiency of fuel cells and factors affecting it.

6. (a) Discuss the environmental impacts of ocean energy conversion systems.

(b) Explain the problem associated with OTEC system, including low efficiency, corrosion, biofauling and high capital cast.

(c) Explain the working of wave energy power plant.

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