Graphic Era HILL UNIVERSITY
Established by an Act of the State Legislature of Uttarakhand (Adhiniyam Sankhya 12 of 2011)
University under section 2(f) of UGC Act, 1956

End Term (Even) Semester Examination May-June 2025

Roll no.....

Name of the Program and semester: B.Tech CE VIII
Name of the Course: Non-Conventional Energy Resources
Course Code: TOE-803
Time: 3-hour

Maximum Marks: 100

Note:

(i) All the questions are compulsory.
(ii) Answer any two sub questions from a, b and c in each main question.
(iii) Total marks for each question is 20 (twenty).
(iv) Each sub-question carries 10 marks.

Q1. (2×10 = 20 Marks) CO1

a. Explain the classification of non-conventional energy resources with examples.
b. Discuss the relative merits and demerits of non-conventional energy sources over conventional sources.
c. Why is there a growing interest in non-conventional energy resources? Discuss with current trends.

Q2. (2×10 = 20 Marks) CO2

a. Explain the working principle of a solar cell and list its major materials.
b. Describe the construction and working of a flat plate solar collector.
c. Discuss different methods of thermal energy storage for solar heating and cooling.

Q3. (2×10 = 20 Marks) CO3

a. Describe the types and sources of geothermal energy.
b. Explain the working principle of a Magneto-Hydrodynamic (MHD) power plant.
c. Discuss the environmental impacts of geothermal energy systems.

Q4. (2×10 = 20 Marks) CO4

a. Explain the working of a hydrogen-oxygen fuel cell with a neat diagram.
b. Discuss the factors influencing the site selection for wind energy plants.
c. Compare thermo-electric and thermionic conversion systems based on efficiency and working principles.

Q5. (2×10 = 20 Marks) CO5

a. Discuss the theory and methods of biomass energy conversion.
b. Explain the working principle of Ocean Thermal Energy Conversion (OTEC) systems.
c. What is the role of waste recycling plants in energy recovery? Discuss with examples.