

**The Assam Royal Global University, Guwahati**

**Royal School of Engineering and Technology**

**B. Tech Civil Engineering 4<sup>th</sup> Semester**

**Semester End Examination, August 2021**

**Course Title: Energy Science & Engineering**

**Course Code: CEE022C402**

**Time: 3 Hours**

**Maximum Marks: 70**

**Note: Attempt all questions as per instructions given.**

*The figures in the right-hand margin indicate marks.*

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**SECTION – A**

**1. Attempt all questions.**

**2x8**

- a. Why is it important to study Energy Science?
- b. What do you mean by fossil fuels?
- c. What is meant by energy conservation?
- d. What is clean energy technology?
- e. Why is coal mining important?
- f. What is a solar chimney?
- g. What do you understand by Green Technology?
- h. What is LEED ratings in green technology?

**2. Answer any two of the following.**

**6x2**

- a. Explain the need and importance of energy storage in the energy sector.
- b. What is a solar panel? Briefly explain the working of a solar panel with a neat diagram.
- c. What is biomass? What are the sources of biomass? What is the importance of biomass in today's context.?

**3. Answer any two of the following.**

**7x2**

- a. How will you define Energy Economics? Discuss the environmental consequence of energy use.
- b. Describe elaborately the effective measures for energy conservation at household level.
- c. Explain the role of energy in economic development and social transformation.

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**SECTION – B**

4. Answer **any two** of the following. **7x2**
- a. What are the components of a wind turbine? How does a wind turbine work?
  - b. Explain the complexities which arise from usage of underground and undersea oil pipelines.
  - c. Demonstrate the in-service tests and inspection that needs to be conducted to meet the safety requirements of reactor containment buildings/systems.
5. Answer **any two** of the following. **7x2**
- a. Write an elaborate note on the general principles of green building.
  - b. Explain in your own words the advantages and applications of green technology.
  - c. Explain in detail the significance of energy audit in the accomplishment of an effective energy cost control program.