STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI 600086
(For Candidates admitted during the academic year 2019-2020 and thereafter)

B.A / B.Sc. DEGREE EXAMINATION, NOVEMBER 2024
FIFTH SEMESTER

COURSE : INTERDISCIPLINARY CORE
PAPER : RENEWABLE ENERGY AND ENERGY ECONOMICS
SUBJECT CODE : 19ID/IC/RE55
TIME : 3 HOURS **MAX. MARKS : 100**

SECTION A

Answer ALL questions in 50 words each **(10 x 3 = 30)**

1. Define Energy Intensity.
2. State any three reasons that affects price of Energy.
3. Write a short note on Primary Energy demand.
4. What does Planetary pressure adjusted HDI refer to?
5. What is Levelized cost of Energy?
6. Define Energy. What are the different forms of energy?
7. Define solar constant.
8. Write a brief note on the solar radiation at the earth's surface
9. Explain the process of wind formation in the earth's atmosphere.
10. Write a brief note on sun path chart.

SECTION B

Answer any SIX out of NINE questions in 250 words each **(6 x 5 =30)**

11. Explain the working of solar water heater with a neat diagram.
12. Discuss the principles of aerodynamics that govern wind flow around wind turbine blades.
13. With a neat diagram explain the working of flat plate collector.
14. How is the amount of energy consumed measured in terms of units? Explain the calculation process.
15. Elaborate the significance, scope, and importance of Energy Economics.
16. a) Discuss the environmental consequences of using fossil fuels. How do these sources contribute to climate change, air pollution, and ecosystem degradation?
    b) Write down the significance of Global Energy Transition index.
17. Bring out the recent Renewable Energy Initiatives in India.
18. Explain the evolution of Sustainable energy development.
19. Briefly explain the concept of Energy Security.

….2

SECTION C

Answer any TWO out of FOUR questions in 1000 words (2 x 20 = 40)

20. a) How can a cost-benefit analysis of a government initiative be conducted to compare the economic viability of solar and wind energy within the framework of renewable energy economics given the advantage and disadvantages of Solar and Wind energy?
    b) What are the different Sources of energy? Explain with advantages and disadvantages.

21. a) Critically examine the Renewable Energy market structure.
    b) With a neat diagram explain the working of a vertical axis wind machine.

22. a) Differentiate Social, Economic and Energy development
    b) Explain the working of photovoltaic cell. Give the PV characteristic curve and explain its use in solar panels.

23. a) How does the consumer's equilibrium between using TNEB electricity and installing a rooftop solar system under the Rooftop Solar Phase II scheme, which offers subsidies of up to 40% for systems up to 3 kW and 20% for installationsbetween 3 kW
    and 10 kW, get affected? Explain using appropriate Economic tools.
    b) What are the different types of concentrating collectors? Explain them in detail.

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