

Register No: .....

Name: .....

**SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)**

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

**EIGHTH SEMESTER B.TECH. DEGREE EXAMINATION(R), MAY 2024****Mechanical Engineering****(2020 SCHEME)****Course Code : 20MET456****Course Name : Advanced Energy Engineering****Max. Marks : 100****Duration:3 Hours****PART A***(Answer all questions. Each question carries 3 marks)*

1. What are the advantages and disadvantages of hydel power plants?
2. How is India addressing its energy needs and sustainability in the face of growing demand and environmental concerns?
3. How would you compare a passive and active solar thermal energy system?
4. Discuss the advantages of vertical axis wind turbines over horizontal axis wind turbines.
5. List out the different types of biomasses that are used as fuel.
6. What are the merits and demerits of using biomass as an energy source?
7. Discuss advantages and disadvantages of a tidal power plant.
8. List any three applications of fuel cells.
9. Discuss the sources of air pollution.
10. List any four sources of land degradation.

**PART B***(Answer one full question from each module, each question carries 14 marks)***MODULE I**

11. Elucidate the necessity of energy storage in the context of renewable sources of energy. 14

**OR**

12. Sketch the layout of a diesel power plant and explain its working. 14

**MODULE II**

13. How would you classify solar thermal power cycles? Add suitable diagrams to your answer. 14

**OR**

14. What are vertical-axis wind turbines? Explain the construction and working of any one type of vertical-axis wind turbine with the help of neat sketch. 14

**MODULE III**

15. Explain the biochemical and thermochemical methods of biomass conversion. 14

**OR**

16. Explain the construction and working of KVIC (floating type) bio gas plant. 14

**MODULE IV**

17. Explain the working of fuel cells. List out the different types of fuel cells. 14

**OR**

18. Explain working of flashed steam system and vapour dominated system for geo thermal energy extraction with the help of neat sketches. 14

**MODULE V**

19. a. Explain the causes and effects of enhanced greenhouse effect. 8

b. Describe any six causes for the loss of biodiversity. 6

**OR**

20. a. Explain environmental impacts of wind power and solar power production. 7

b. What are the effects of global warming. 7

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