

Register No.: Name:

SAINTGITS COLLEGE OF ENGINEERING (AUTONOMOUS)

(AFFILIATED TO APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY, THIRUVANANTHAPURAM)

SIXTH SEMESTER B.TECH DEGREE EXAMINATION (R), MAY 2023**CHEMICAL ENGINEERING****(2020 SCHEME)****Course Code: 20CHT322****Course Name: Energy Engineering****Max. Marks: 100****Duration: 3 Hours****PART A*****(Answer all questions. Each question carries 3 marks)***

1. List any merits and demerits of thermal power plants.
2. Identify the causes of energy crisis.
3. Explain how solar energy is utilized for cooling purposes.
4. Explain active and passive solar system.
5. List few advantages of anaerobic digestion.
6. Name major components of a wind turbine.
7. Discuss benefits of fuel cells.
8. Explain the principle of magneto hydrodynamics.
9. Identify the objectives of an energy audit.
10. Explain the concept of Pinch technology.

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

11. a) List and explain any 7 alternate energy sources. (7)
- b) Explain the construction and working of a thermal power plant. (7)

OR

12. a) Explain the construction and working of a nuclear power plant. (7)
- b) Explain the construction and working of a fluidized bed combustion. (7)

MODULE II

13. a) Explain the construction of a flat plate collector with a neat sketch. (7)
- b) With a neat sketch explain tidal energy conversion. (7)

OR

14. a) Explain the natural circulation type solar heater with a neat sketch. (7)
b) Explain solar refrigeration. (7)

MODULE III

15. a) Discuss the economy of the wind farms. (7)
b) Explain Darrieus and Savanius rotor with a neat sketch. (7)

OR

16. a) Explain biomass conversion routes. (7)
b) Discuss the factors affecting biomethanation. (7)

MODULE IV

17. a) Explain alkaline fuel cells with a neat sketch. (7)
b) Explain the working of a microbial fuel cell with a neat sketch. (7)

OR

18. a) Explain MHD systems with neat sketches. (14)

MODULE V

19. a) Explain the various energy conservation measures in distillation columns and furnaces. (14)

OR

20. a) Prepare an energy audit check list in paper industry. (7)
b) Explain the various electrical energy conservation measures in chemical process plants. (7)
