32. a. Explain the working of open cycle MHD Power Generation. 12 2 5 7

(OR)

b. Explain the working Principle of an open Cycle Magneto – Hydrodynamic Power Generation system. 12 2 5 7

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Reg. No.														

B.Tech. DEGREE EXAMINATION, JUNE 2023

Sixth & Seventh Semester

18MEO102T – ALTERNATIVE SOURCES OF ENERGY

(For the candidates admitted from the academic year 2018-2019 to 2021-2022)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours Max. Marks: 100

	Marks	BL	CO	PO
PART – A (20 × 1 = 20 Marks) Answer **ALL** Questions				
1. Which of the following energy has the greatest potential among all the sources of renewable energy? (A) Solar Energy (B) Wired Energy (C) Thermal Energy (D) Hydro – Electrical Energy	1	1	1	1
2. In the paraboloid dish concept, the concentrator tracks the sun by rotating about (A) One Axes (B) Two Axes (C) Three Axes (D) Zero	1	1	1	7
3. Solar radiation received on any point of earth is called (A) Insulation (B) Beam Radiation (C) Diffuse Radiation (D) Infrared Rays	1	1	1	7
4. Solar radiation flex is usually measured with the help of _____. (A) Anemometer (B) Pyranometer (C) Sunshine Recorder (D) Meter	1	1	1	7
5. The output of solar cell is of the order of (A) 1W (B) 5W (C) 10W (D) 20W	1	1	1	7
6. Which type of axis does a Savonius rotor has? (A) Horizontal Axis (B) Mediolalexial Axis (C) Medical Axis (D) Lateral Axis	1	1	2	7
7. Temperature attained by a Flat Plate collector is (A) About 90°C (B) Range of 100°C to 150°C (C) Above 150°C (D) Zero °C	1	1	2	7
8. Temperature attained by cylindrical parabolic collector is of the order of (A) 50 – 100°C (B) 100 – 150°C (C) 150 – 200°C (D) 200 – 300°C	1	1	2	7

9. Most widely used solar material is — 1 1 3 7
   (A) Arsenic (B) Cadmium
   (C) Silicon (D) Steel

10. Reflecting mirrors used for exploring solar energy are called — 1 1 3 7
   (A) Mangle (B) Ponds
   (C) Diffusers (D) Helios facts

11. Waves are caused indirectly by — 1 13 7
   (A) Wind Energy (B) Solar Energy
   (C) Geo – thermal Energy (D) Wave Energy

12. Total energy development needs — 1 1 3 7
   (A) Huge capacity and Long construction time (B) Huge Capacity and Low Construction Time
   (C) Low Capacity and Long Construction Time (D) Low Capacity and Low construction Time

13. What is hot molten rock called? — 1 1 4 7
   (A) Lava (B) Magma
   (C) Igneous Rocks (D) Volcano

14. The single solar cell voltage is about — 1 1 4 7
   (A) 0.2V (B) 0.5V
   (C) 1.0V (D) 2.0V

15. What is the function of the turbine in a hydro power plant? — 1 1 4 7
   (A) Produce electrical device (B) Produce electrical power
   (C) Produce heat power (D) Produce mechanical power

16. Bio Gas is predominantly — 1 1 4 7
   (A) Hydrogen (B) Carbon Monoxide
   (C) Carbon dioxide (D) Methane

17. _____ is the principle products from fermentation process — 1 1 5 7
   (A) Ethanol (B) Methanol
   (C) Resalable Oil (D) Higher Alcohol

18. Which material should be added in the feed of a biogas to increase nitrogen content? — 1 1 5 7
   (A) Lignin (B) Carbohydrate
   (C) Chopped Leguminous Plants (D) Night Soil

19. Pyrolysis is _____ process. — 1 1 5 7
   (A) Thermal Decomposition (B) Thermo Chemical decomposition
   (C) Fermentation (D) Bio Chemical Decomposition

20. Solar energy stored in material such as wood, grain sugar and municipal waste is called — 1 1 5 7
   (A) Fossil Fuels (B) Biomass
   (C) Geothermal Energy (D) Natural Gas

	Marks	BL	CO	PO

PART – B (5 × 4 = 20 Marks)
Answer **ANY FIVE** Questions

21. What are the physical principles used to convert solar radiation into heat? — 4 2 1 1,7

22. Explain the working principle of Solar distillation. — 4 1 1 1,7

23. Explain the basic components of wind energy conservation system. — 4 2 2 7

24. Discuss the characteristic features of liquid dominated systems. — 4 2 2 7

25. What are the different solar energy collectors? — 4 2 3 7

26. Describe: Faraday's Law — 4 2 4 7

27. Classify Bio Gas Plants. — 4 2 5 7

PART – C (5 × 12 = 60 Marks)
Answer **ALL** Questions

	Marks	BL	CO	PO

28. a. Explain Solar Refrigeration System with a neat diagram. — 12 2 1 7

(OR)

b. Describe the Solar Pond Power Plant with a neat diagram. — 12 2 1 7

29. a. Explain the factors to be considered for site selection of horizontal axis wind turbine. — 12 2 2 7

(OR)

b. What is meant by Betz limit? Show that a wind turbine cannot extract more than 59.3% of the wind energy? — 12 3 2 7

30. a. Draw the layout of open OTEC system. Also discuss the working of single and double basin tidal power plants. — 12 2 3 7

(OR)

b. Explain the working of Anderson Cycle Ocean thermal energy conversion system with a neat sketch. — 12 2 3 7

31. a. What is Biogas Plant? Explain any one type of biogas plant with a neat sketch. — 12 2 4 7

(OR)

b. Discuss with necessary sketches, the working principle of an updraft and downdraft gasifier. — 12 2 4 7