Reg. No.															

B.Tech. DEGREE EXAMINATION, MAY 2023
Fourth Semester

18EIE202T – RENEWABLE 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. Identify the renewable energy, which produce DC power — 1 | 1 | 1 | 1
   (A) Solar (B) Fuel cell
   (C) Hydro (D) Wind

2. The production of biogas is obtained from — 1 | 1 | 1 | 1
   (A) Metallic waste (B) Solar heat
   (C) Municipal and residential waste (D) E-waste

3. The energy sources such as coal, oil, natural gas and biomass are classified as — 1 | 1 | 1 | 1
   (A) Secondary energy (B) Primary energy
   (C) Non-commercial energy (D) Renewable energy

4. Identify the corrosive acid gas which combines with water vapour in the atmosphere to produce acid rain — 1 | 1 | 1 | 1
   (A) Nitrogen oxide (B) Carbon monoxide
   (C) Sulphur dioxide (D) Carbon dioxide

5. Radiation from the sun that reaches the earth without scattering is called _____ — 1 | 1 | 2 | 1
   (A) Diffuse radiation (B) Direct radiation
   (C) Indirect radiation (D) Reflection

6. Air Mass (AM) equals to _____,when the sun is directly overhead at sea level. — 1 | 1 | 2 | 1
   (A) 0 (B) 1
   (C) 1.5 (D) 2

7. Thermopile consists of _____ — 1 | 1 | 2 | 1
   (A) Multiple thermocouple connected in series (B) Multiple thermocouple connected in parallel
   (C) Multiple thermistor connected in series (D) Multiple thermistor connected in parallel

8.	In solar water heater, the density of hot water _____ (A) Is lesser than the cold water (B) Is greater than the cold water (C) Is equal to that of cold water (D) Cannot be determined	1	1	2	1
9.	Identify the part of the wind mill which acts as a housing for the turbine? (A) Wind vane (B) Shaft (C) Wind mill head (D) Turbine	1	1	3	1
10.	_____type of wind turbine has low RPM. (A) Small wind turbine (B) Large wind turbine (C) Medium wind turbine (D) Remote wind turbine	1	1	3	1
11.	In small turbines, yaw action is controlled by _____ (A) Trail vane (B) Blades (C) Shaft (D) Yaw motor	1	1	3	1
12.	Identify the type of generator which is used in wind turbines? (A) Recreational generator (B) Synchronous generator (C) Asynchronous generator (D) Alternator	1	1	3	1
13.	In geothermal energy, the full form of EGS is _____ (A) Engraved Geothermal Systems (B) Enhanced Geothermal System (C) Exhaust Gas System (D) Engineered Geophysical System	1	1	4	1
14.	OTES is caused by _____ (A) Wind energy (B) Geothermal energy (C) Solar energy (D) Gravitational force	1	1	4	1
15.	A tide whose difference between high and low tides is least is called as _____ (A) Diurnal tide (B) Neap tide (C) Spring tide (D) EBB tide	1	1	4	1
16.	The process of producing energy by utilizing heat trapped inside the earth surface is called _____ (A) Hydro thermal energy (B) Geo thermal energy (C) Solar energy (D) Wave energy	1	1	4	1
17.	Kinetic energy that results from the oscillation of water is called _____ (A) Wave energy (B) Tidal energy (C) Ocean thermal energy (D) Hydro energy	1	1	5	1
18.	_____plant have highest life span. (A) Nuclear (B) Coal power (C) Hydro power (D) Diesel generating station	1	1	5	1
19.	Identify the number of high peaks which occur in a single pool tidal system. (A) 1 (B) 2 (C) 3 (D) 4	1	1	5	1
20.	Movement of water away from the shore is called _____ (A) Flood tide (B) Spring tide (C) EBB Tide (D) Neap tide	1	1	5	1

PART – B (5 × 4 = 20 Marks)

Answer **ANY FIVE** Questions

		Marks	BL	CO	PO
21.	List the advantages and disadvantages of wind energies which is used as renewable source.	4	1	1	1
22.	Differentiate concentrating and non-concentrating collectors with example.	4	2	2	1
23.	Summarize the advantage and limitation of wind energy conversion system.	4	2	3	1
24.	Define cogeneration and show how does it work?	4	1	4	1
25.	Compare open and closed OTEC cycles.	4	5	5	1
26.	Summarize the components of tidal power plant.	4	2	5	1
27.	List the materials used in ethanol production.	4	2	4	1

PART – C (5 × 12 = 60 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
28. a.	Discuss the present Indian energy scenario in domestic, industrial, commercial agriculture and transportation sector.	12	2	1	1
	(OR)				
b.	Explain different classification of energies with an example.	12	2	1	1
29. a.	Illustrate any two methods of solar thermal collectors.	12	3	2	1
	(OR)				
b.	Describe the solar PV system and its type with necessary sketch.	12	3	2	1
30. a.	Examine the wind energy conversion system.	12	3	3	1
	(OR)				
b.	Determine the working and the components of wind turbine with its diagram.	12	3	3	1
31. a.	Illustrate the pyrolysis process with neat diagram.	12	3	4	1
	(OR)				
b.	Discuss the working and the type of biomass gasifier.	12	2	4	1
32. a.	Illustrate the hydro power plant with its layout.	12	3	5	1
	(OR)				
b.	Explain the geo thermal power plant with its diagram.	12	2	5	1

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