Reg. No.															

B.Tech. / M.Tech. (Integrated) DEGREE EXAMINATION, MAY 2024
Fourth Semester

21EIE202T – RENEWABLE ENERGY
(For the candidates admitted during the academic year 2021-2022 , 2022-2023 & 2023-2024)

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** and **Part - C** should be answered in answer booklet.

Time: 3 Hours Max. Marks: 75

PART – A (20 × 1 = 20Marks)
Answer **ALL** Questions

	Marks	BL	CO	PO
1. _____is the largest renewable energy generation in the world (A) Solar (B) Wind (C) Hydro (D) Biomass	1	1	1	1
2. Identify the energy source that is not sustainable (A) Solar (B) Wind (C) Hydro (D) Biomass	1	1	1	1
3. Wind and hydrogen energy are examples of _____ (A) Primary sources (B) Primary and secondary sources respectively (C) Secondary sources (D) Tertiary sources	1	1	1	1
4. Choose the resource that does not produce CO_2 during electricity generation (A) Coal (B) Methane (C) Uranium (D) Biogas	1	1	1	1
5. Aperture area of a solar collector is roughly equal to _____ (A) Coolant area (B) Generator area (C) Absorber area (D) System area	1	1	2	1
6. Anti freeze solutions are used as coolant for water in order to _____ (A) Increase boiling point (B) Decrease boiling point (C) Increase freezing point (D) Decrease freezing point	1	1	2	1
7. Select the one which is used as absorbers in evacuated tube solar collectors (A) Carbon tubes (B) Wooden tubes (C) Plastic tubes (D) Metallic or glass tubes	1	1	2	1
8. Evacuated flat-plate collectors use _____pumps. (A) Heat (B) Flash getter (C) Non-evaporable (D) Internal combustion	1	1	2	1

9.	Heating and cooling of atmosphere generates _____ (A) Thermocline circulation (B) Radiation currents (C) Convection currents (D) Conduction currents	1	1	3	1
10.	The first country was developed wind mills is _____ (A) Egypt (B) Mongolia (C) Iran (D) Japan	1	1	2	1
11.	Pick the diameter of wind turbine blades (A) 320 feet (B) 220 feet (C) 80 feet (D) 500 feet	1	1	3	1
12.	Choose the speed range of electricity generation from wind energy (A) 100 – 125 mph (B) 450 – 650 mph (C) 250 – 450 mph (D) 30 – 35 mph	1	1	3	1
13.	An example of lipid is_____ (A) Sugar (B) Palm oil (C) Glucose (D) Cellulose	1	1	4	1
14.	_____is used to replenish nutrients in soil (A) Steel (B) Soda (C) Biomass ash (D) Coal ash	1	1	4	1
15.	_____defines sustainability of biogas feedstock. (A) Heating value (B) Calorific value (C) C:N ratio (D) Thermal voltage	1	1	4	1
16.	Biomass is used to produce _____ (A) Chemicals (B) Fibres (C) Biochemicals (D) Transportation fuels	1	1	4	2
17.	Water is allowed through _____ to the turbine (A) Pipe (B) Sluice gate (C) Canal (D) Pump	1	1	5	1
18.	Select the exact time for one tidal cycle (A) 22h, 20 min (B) 24h, 50 min (C) 20h, 10 min (D) 22h, 50 min	1	1	5	1
19.	Identify the type of tide if difference between high and low tide is greatest (A) Diurnal tide (B) Neap tide (C) Spring tide (D) Ebb tide	1	1	5	1
20.	The hole on earth's surface from where the steam comes out from earth is called as _____ (A) Gash (B) Mod pot (C) Void (D) Fumarole	1	1	5	1

PART – B (5 × 8 = 40 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
21. a.	State and explain any four aspects of renewable energy and its importance.	8	2	1	1
	(OR)				
b.	Classify primary and secondary energy.	8	2	1	1
22. a.	Discuss about evacuated tube collector with suitable sketch.	8	2	2	1
	(OR)				
b.	Explain with a schematic about Fresnal reflector based dish collector.	8	2	2	1
23. a.	Discuss the components of wind turbine generator with a schematic.	8	3	3	1
	(OR)				
b.	Explain the need for asynchronous generator in wind turbine unit.	8	3	3	1
24. a.	Explain in details about various methods involved in geothermal energy systems.	8	2	4	1
	(OR)				
b.	Explain the different process involved in gasification process.	8	2	4	1
25. a.	Discuss the limitations of geothermal energy.	8	2	5	1
	(OR)				
b.	Explain about thermionic emission.	8	2	5	1

PART – C (1 × 15 = 15 Marks)

Answer **ANY ONE** Questions

		Marks	BL	CO	PO
26.	Examine Wind Energy Conversion System (WECS) with its diagram.	15	2	3	1
27.	With neat sketch, explain in detail about hydropower plant.	15	2	5	1

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