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Code No. : 17544 S (B) N

VASAVI COLLEGE OF ENGINEERING (AUTONOMOUS), HYDERABAD

Accredited by NAAC with A++ Grade

B.E. (Mech. Engg.) VII-Semester Supplementary Examinations, May/June-2023

Renewable Energy Systems (PE-IV)

Time: 3 hours

Max. Marks: 60

Note: Answer all questions from Part-A and any FIVE from Part-B

Part-A (10 × 2 = 20 Marks)

Q. No.	Stem of the question	M	L	CO	PO
1.	Distinguish between Beam radiation and scattered radiation.	2	2	1	1
2.	List the applications, merits, and demerits of a solar energy.	2	1	1	1
3.	What is basic wind power equation?	2	1	2	1
4.	List different geothermal fields.	2	1	2	1
5.	List ocean wave energy conversion systems.	2	1	3	1
6.	Sketch and label closed type OTEC power plant.	2	1	3	1
7.	What are the applications of fuel cells?	2	1	4	1
8.	Write the classification of fuel cells based on i) Temperature range ii) Fuel.	2	2	4	1
9.	Write various constituents of a typical biogas.	2	1	5	1
10.	List different application of biogas in rural and urban areas.	2	1	5	1
<b>Part-B (5 × 8 = 40 Marks)</b>					
11. a)	Explain the working principle of a evacuated tube collector with a line diagram.	4	4	1	1
b)	Discuss the working of any one solar thermal power applications.	4	3	1	1
12. a)	Describe the working of vertical axis wind turbine with a neat sketch.	4	4	2	1
b)	Explain the working of a liquid dominated geothermal power plant with the help of a line diagram.	4	4	2	1
13. a)	Explain the principle of open cycle OTEC system with suitable diagram.	4	4	3	1
b)	Sketch and illustrate the working of oscillating water column type wave energy conversion device.	4	4	3	1
14. a)	Describe the working of Solid oxide fuel cell with a sketch.	4	4	4	1
b)	Compare Phosphoric acid fuel cell with Direct methanol fuel cell.	4	2	4	1
15. a)	Describe the working of Floating drum type biogas plant with a sketch.	4	4	5	1
b)	Discuss various biomass conversion processes.	4	2	5	1
16. a)	Describe the working principle of Solar photovoltaic energy conversion system with a line diagram.	4	4	1	1
b)	Compare Vertical axis wind turbines with horizontal axis wind turbines	4	2	2	1
17.	Answer any <i>two</i> of the following:				
a)	What are the advantages and limitations of tidal power generation?	4	2	3	1
b)	List major components of a typical fuel cell and write their function.	4	4	4	1
c)	Compare Fixed dome type bio gas plant with Movable drum bio gas plant.	4	2	5	1

M : Marks; L: Bloom's Taxonomy Level; CO; Course Outcome; PO: Programme Outcome

i)	Blooms Taxonomy Level – 1	20%
ii)	Blooms Taxonomy Level – 2	30%
iii)	Blooms Taxonomy Level – 3 & 4	50%

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