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Code No. : 16516 (A)

VASAVI COLLEGE OF ENGINEERING (Autonomous), HYDERABAD**B.E. (Mech. Engg. : CBCS) VI-Semester Main Examinations, January-2021****Renewable Energy**

(Elective-I)

Time: 2 hours

Max. Marks: 60

*Note: Answer any NINE questions from Part-A and any THREE from Part-B***Part-A (9 × 2 = 18 Marks)**

Q. No.	Stem of the question	M	L	CO	PO
1.	Define beam radiation and diffuse radiation.	2	1	1	1,7
2.	Explain the main components of a photo voltaic system.	2	2	1	1,7
3.	Explain the term power coefficient of wind turbine.	2	2	2	1
4.	Draw the hydro thermal convective region.	2	3	2	1
5.	Outline the sources of ocean thermal energy.	2	2	3	1
6.	Which factors to be considered for site selection of a tidal power plant?	2	2	3	2,3
7.	Classify fuel cells.	2	4	4	2
8.	Compare fuel cell and a battery.	2	4	4	1
9.	Distinguish between biomass and biogas.	2	4	5	1
10.	What are the conditions necessary for photosynthesis?	2	2	5	1
11.	List various instruments used to measure solar radiation.	2	2	1	2
12.	Give any two advantages and disadvantages of wave energy.	2	3	2	1
Part-B (3 × 14 = 42 Marks)					
13. a)	Discuss the working of any two applications of solar energy with the help of line diagram.	7	3	1	2,7
b)	Explain the working of a solar PV cell with the help of a schematic diagram.	7	2	1	2,7
14. a)	Illustrate the working of a horizontal axis wind energy conversion system and its main components with a neat sketch.	7	2	2	2
b)	Explain the working of any one liquid dominated system with a line diagram.	7	2	2	2,6
15. a)	Illustrate the working of closed cycle OTEC system with the help of a neat sketch.	7	2	3	1,6
b)	Explain the working of double basin tidal energy conversion system with the help of a diagram.	7	2	3	1,6

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16. a)	Discuss the operating characteristics of fuel cells.	7	4	4	3
b)	Describe the working of molten carbonate fuel cell with the help of neat sketch.	7	2	4	1
17. a)	Classify and discuss various biomass gasifiers.	7	4	5	1
b)	List the applications of biomass energy and discuss the design considerations of a typical biogas plant.	7	4	5	2,3,7
18. a)	Compare the Concentrating Collectors and Flat Plate Collectors.	7	4	1	2
b)	Describe the important applications of geothermal energy and wind energy.	7	2	2	1
19.	Answer any <i>two</i> of the following:				
a)	Discuss the advantages and limitations of tidal energy.	7	4	3	1
b)	Illustrate the constructional details of a fuel cell.	7	2	4	2
c)	Explain the various factors which affect the generation of biogas.	7	2	5	2,3,6

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

S. No.	Criteria for questions	Percentage
1	Fundamental knowledge (Level-1 & 2)	60
2	Knowledge on application and analysis (Level-3 & 4)	40
3	*Critical thinking and ability to design (Level-5 & 6) (*wherever applicable)	-
