Q.P. Code: 16ME8814 **R16**

Reg. No. | | | | | | | | | | |

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR

(AUTONOMOUS)

M.Tech I Year II Semester (R16) Regular Examinations MAY/JUNE 2017

ALTERNATIVE ENERGY SOURCE

(Thermal Engineering)

(For Students admitted in 2016 only)

Time: 3 hours Max. Marks:60

(Answer all Five Units 5 X 12 =60 Marks)

UNIT-I

1	a.	Distinguish between vertical axis and horizontal axis wind turbines.	5M
	b.	Draw and explain the typical performance curves of wind machines.	7M

OR

2	a.	Discuss the different types of wind turbines used to extract wind energy.	5M
	b.	Derive an expression for energy that can be extracted from wind.	7M

UNIT-II

3	a.	Explain with a simple sketch, construction and working of double basin tidal power plant.	5M
	b.	What are wave energy conversion devices, explain with a simple sketch, working of high level reservoir wave machine?	7M

OR

4	a.	What is the current status of geothermal energy in India?	5M
	b.	Explain Carnot efficiency of an OTEC plant with the help of a thermodynamic cycle on T-s plane. (b) A single basin type tidal power plant has a basin area of 22 km2. The tide has a range of 10 m. The turbine stops operation when the head on it falls below 3 m. Calculate the average power generated during one filling/emptying process in MW, if the turbine generator efficiency is 74%. Take specific gravity of sea water as 1.025.	7M

UNIT-III

5	a.	Explain storage of hydrogen.	6M
	b.	Explain process of using hydrogen as fuel for vehicles.	6M

OR

6	a.	Describe various methods of hydrogen fuel for vehicles.	3M
	b.	What are the advantages and limitations of hydrogen as fuel in transportation sector?	9M

UNIT-IV

7	a.	Enumerate applications of fuel cells.	4M
	b.	List out the advantages and limitations of fuel cell.	8M

OR

8	a.	What is the principle of fuel cell?	6M
	b.	Discuss and differentiate between "Electrical efficiency" and "Thermal efficiency" of the fuel cell.	6M

UNIT-V

9	a.	Draw the arrangement of high/medium head design of small hydro power project and explain about the major components.	12M

OR

10	a.	What is thermal reactor? What is a fast reactor?	4M
	b.	Draw a neat sketch of a gas cooled nuclear reactor and explain its construction and working.	8M

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