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**SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR**  
(AUTONOMOUS)**B.Tech III Year I Semester Regular & Supplementary Examinations Nov/Dec 2019**  
**NON-CONVENTIONAL ENERGY RESOURCES**  
(Mechanical Engineering)

Time: 3 hours

Max. Marks: 60

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

**UNIT-I**

- 1 a What are the types of solar radiation measuring Instruments? **6M**  
b Explain the working of Sunshine recorder with a neat sketch. **6M**

**OR**

- 2 a What is the need of renewable energy? **6M**  
b Describe Renewable Energy Scenario in Andhra Pradesh. **6M**

**UNIT-II**

- 3 a Mention the thermal analysis of flat plate collector. **6M**  
b Write the working principle of flat plate collector with a neat sketch. **6M**

**OR**

- 4 a Illustrate the functions of various components in flat plate collectors. **6M**  
b How Flat plate collectors are different from Concentrating collectors. **6M**

**UNIT-III**

- 5 a What is wind power? Explain in detail. **6M**  
b Mention the merits and demerits of wind energy. **6M**

**OR**

- 6 a Differentiate HAWT and VAWT. **4M**  
b Explain briefly the functioning of Darrieus Wind Turbine. **8M**

**UNIT-IV**

- 7 a What is biomass gasifier and write its gasification reactions. **6M**  
b How do you classify the gasifiers and explain anyone in detail. **6M**

**OR**

- 8 a What is biomass direct combustion? Explain in detail. **6M**  
b Name various stokers used for the combustion of biomass and explain anyone with a neat figure. **6M**

**UNIT-V**

- 9 a What is tide? Explain tidal energy and its conversion with neat diagram. **6M**  
b Explain the working of fuel cell and their applications. **6M**

**OR**

- 10 a What are the different methods of hydrogen storage ? **6M**  
b Differentiate wave and tidal energy. **6M**

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