Reg. No:..... Name: .....

APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY

SEVENTH SEMESTER B.TECH. DEGREE (HONS.) EXAMINATION December 2019

Course code: 08EE7221(C)

Course Name: Renewable Energy Technologies

Time:3 hours **Max.marks: 60**

Answer all six questions.

Modules 1 to 6: Part 'a' of each question is compulsory and answer either part 'b' or part 'c' of each question.

(Add any other instruction specific to course here like the use of IS codes/design tables etc.)

Q.no.	Module 1	Marks
1.a	State the significance of Renewable energy System.	3
	Answer b or c	
b	What are the various Renewable Energy Systems?	6
c	Explain the recent developments in Renewable Energy Sector.	6

Q.no.	Module 2	Marks
2.a	Wind speed is 10m/s at the standard atmospheric pressure. Calculate (i) the total power density in wind stream, (ii) the total power produced by a turbine of 100m diameter with an efficiency of 40%. Air density = 1.226J/kg.K/m^3	3
	Answer b or c	
b	Describe with a neat sketch the working of a Wind Energy System with main components.	6
c	Explain about the extraction of energy from wind and derive the expression for total power in wind stream.	6

Q.no.	Module 3	Marks
3.a	Draw the power speed characteristics of wind turbine.	3
	Answer b or c	
b	Draw and explain wind power generation curve.	6

c	Explain the Fixed Speed Induction Generator configurations for wind generation.	6

Q.no.	Module 4	Marks
4.a	What are the types of PV cells?	3
	Answer b or c	
b	Explain stand alone and grid connected solar energy system.	6
c	Explain maximum power tracking in solar energy system.	6

Q.no.	Module 5	Marks
5.a	With brief description write the factors affecting Biogas production?	4
	Answer b or c	
b	With neat diagram explain about biomass gasifiers.	8
c	Explain about the various biomass conversion technologies	8

Q.no.	Module 6	Marks
6.a	With neat diagram explain about Oscillating Ducks wave energy conversion machines.	4
	Answer b or c	
b	With neat diagram explain the development of electric power from geothermal resources.	8
c	Derive the mathematical analysis of wave energy in terms of Potential Energy, Kinetic Energy, Total Energy and Wave Power.	8