R18

Code No: 157DN

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B. Tech IV Year I Semester Examinations, July/August - 2023
RENEWABLE ENERGY SOURCES
(Common to ME, MCT)

Time: 3 Hours **Max.Marks:75**

Note: i) Question paper consists of Part A, Part B.
ii) Part A is compulsory, which carries 25 marks. In Part A, Answer all questions.
iii) In Part B, Answer any one question from each unit. Each question carries 10 marks and may have a, b as sub questions.

PART – A
(25 Marks)

1.a)	What are the advantages of using renewable energy sources?	[2]
b)	Analyze the importance of renewable energy in terms of CO_2 reduction.	[3]
c)	What is Solar constant? What is its standard value?	[2]
d)	What are some common applications of solar PV systems?	[3]
e)	Define Betz limit.	[2]
f)	What are the main components of a wind turbine?	[3]
g)	What are the biomass conversion processes?	[2]
h)	What are the applications of biogas in various sectors, such as cooking, heating, and electricity generation?	[3]
i)	What is the difference between power from waves and power from tides?	[2]
j)	What is a geothermal power plant, and how does it generate electricity?	[3]

PART – B
(50 Marks)

2.a)	Are renewable energy sources clean energy sources? Analyze.	
b)	Comment on the future availability trend of fossil fuels in the world.	[5+5]
	OR	
3.a)	What is Global climate change? How is it affected because of energy sources? And list out some key points to reduce it.	
b)	Discuss the present energy situation in the world and in India.	[5+5]
4.a)	Explain the significant working characteristics of a Solar Cell.	
b)	Illustrate the working principle of solar thermal energy storage systems.	[5+5]
	OR	
5.a)	Discuss about the operation of solar Photovoltaic systems with their advantages and disadvantages.	
b)	Discuss how solar radiation is measured and estimated.	[5+5]
6.a)	Discuss the safety and environmental impact of wind energy.	
b)	Explain the advantages and disadvantages of offshore wind energy forms.	[5+5]
	OR	
7.a)	How does wind is classified and what are the factors influencing the wind.	
b)	Discuss the aerodynamic considerations in Windmill design.	[5+5]

8.a) What is biomass? How does a biomass conversion unit work? What are the components of a biomass conversion unit?

b) Discuss about the anaerobic digestion and the factors affecting anaerobic digestion. [5+5]

OR

9.a) What is pyrolysis process? Explain in detail with sketch.

b) Analyze the advantages of floating drum over fixed dome biogas plant. [5+5]

10.a) Explain the application of geothermal energy by analyzing the advantages and disadvantages of it.

b) Discuss the advantages of the wave energy conversion system. [5+5]

OR

11.a) Describe the working of open cycle OTEC plant. What are the advantages and disadvantages of OTEC plant?

b) Explain the significance of small hydro power plants and their elements. [5+5]

---ooOoo---