



R22 Regulation

Subject code: 406HA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

(Autonomous, Accredited by NAAC with 'A+' Grade)

B.Tech VI Semester Regular Examinations, May 2025

RENEWABLE ENERGY SOURCES

(CSE(DS))

Maximum Marks: 60

Date: 27.06.2025

Duration: 3 hours

- Note: 1. This question paper contains two parts A and B.
 2. Part A is compulsory which carries 10 marks. Answer all questions in Part A.
 3. Part B consists of 5 Units. Answer any one full question from each unit.
 4. Each question carries 10 marks and may have a, b, c, d as sub questions.

Part-A

All the following questions carry equal marks (10X1M=10 Marks)		Marks	CO	Bloom Tx
1.a)	List few conventional sources.	1M	1	2
b)	Define power coefficient of a wind power.	1M	1	1
c)	List applications of photo voltaic cell.	1M	2	1
d)	List any two limitations of low temperature fuel cells.	1M	2	2
e)	What is the slip of induction generators?	1M	3	1
f)	What is stand-alone operation of induction generator?	1M	3	2
g)	List few limitations of ultra capacitors as energy storage systems.	1M	4	2
h)	What are the units of energy storage capacity?	1M	4	1
i)	What is islanding mode in power systems?	1M	5	1
j)	List the necessity of inter connection of renewable energy sources.	1M	5	2

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
2	a) Discuss the advantages of renewable energy sources in detail. b) What is distributed generation. Discuss its advantages?	5M 5M	1	L2
OR				
3	a) Compare various types of wind turbines. b) Explain demand side management options.	5M 5M	1	L2
4	a) Explain the effect of temperature on characteristics of PV cell. b) Discuss the equivalent circuit of PV cell.	5M 5M	2	L2
OR				
5	a) Explain the classification of photo voltaic systems. b) Discuss the advantages and disadvantages of fuel cells.	5M 5M	2	L2
6	a) Explain the working principle of induction generator. b) Derive an expression for power generated of a self-excited induction generator.	5M 5M	3	L2
OR				
7	Explain PEMFC fuel cell.	10M	3	L2

8	Discuss the advantages of lead acid batteries as energy storage systems.	10M	4	L2
OR				
9	a) Write few salient points on compressed air energy storage system? b) Does an energy storage can be viewed as an economic resource. Justify your answer.	5M 5M	4	L2
10	a) Explain the advantages of integrating multiple renewable energy sources. b) Discuss power injection process.	5M 5M	5	L2
OR				
11	a) Explain interconnection technologies involved for interconnecting renewable energy sources to grid. b) Discuss standards for interconnection of renewable energy sources to grid.	5M 5M	5	L2