R20 Regulation *Subject code:3O8CA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VIII Semester Supplementary Examinations, May 2026

RENEWABLE ENERGY SYSTEMS

(Common to CE, CSE, CSE(AI&ML) & CSE(DS))

Maximum Marks: 70 Date: 08.05.2026 Duration: 3 hours

Note: **1.This question paper contains two parts A and B.**
2. Part A is compulsory which carries 20 marks. Answer all questions in Part A.
3. Part B consists of 5 Units. Answer any one full question from each unit which carries 10M.
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 (10X2M=20 Marks)		Marks	CO	Bloom Tx
1	Define altitude angle.	2M	1	BL2
2	Define zenith angle and Azimuth angle.	2M	1	BL1
3	Write the applications of Solar energy system.	2M	2	BL1
4	Define Solar Photovoltaic.	2M	2	BL2
5	Write the factors influencing wind.	2M	3	BL1
6	Define energy wheeling.	2M	3	BL2
7	Define Bio energy system.	2M	4	BL1
8	List the applications of waste energy.	2M	4	BL1
9	Define OTEC.	2M	5	BL2
10	Define steam ejection. wind energy	2M	5	BL1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	Bloom Tx
11	Examine the impact of environmental consequences of fossil fuel usage.	10M	1	BL4
	OR			
12	Compare the global scenario in energy systems by analyzing the energy mix in different regions.	10M	1	BL4
13	Develop an understanding of solar photovoltaic (PV) conversion by explaining how sunlight is converted in to into electrical energy.	10M	2	BL3
	OR			
14	Analyze thermal energy systems by explaining their working principles along with applications and advantages.	10M	2	BL3
15	Examine the factors involved in site selection for wind energy systems, considering aspects such as wind speed, topography, land use, proximity to the power grid, and environmental impact.	10M	3	BL4
	OR			

16	Summarize the safety aspects and environmental impact due to installation of wind power plant.	10M	3	BL3
17	List out the classification of biogas plants and explain any two with neat sketch.	10M	4	BL3
	OR			
18	Analyze the technology behind biogas plants, explaining the key components such as the digester, gas storage, and filtration systems.	10M	4	BL3
19	Analyze the working principle of ocean wave energy conversion by examining how the kinetic energy from ocean waves is transformed into electrical energy.	10M	5	BL3
	OR			
20	Discuss the construction and working of propeller type of turbine used for hydroelectric projects with necessary diagram.	10M	5	BL3