



R18 Regulation

Subject code:2E8CA

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VIII Semester Supplementary Examinations, April 2024

Renewable Energy Sources

(Mechanical Engineering)

Maximum Marks: 70

Date:24.04.2024 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.
 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)

- 1 Give the significance of sustainable development.
- 2 List the limitations of conventional energy sources.
- 3 Mention the effect of temperature on the performance of a flat plate collector.
- 4 Define solar constant.
- 5 What is the average wind speed (km/h) considered as good for operation of wind mill?
- 6 Mention the limitations of wind power.
- 7 Define gasification.
- 8 What is pyrolysis?
- 9 What are neap tides?
- 10 List the limitations of tidal energy conversion plants.

Part-B

Answer All the following questions.

(5X10M=50Marks)

- 11 Explain about the different types of renewable energy (RE) sources. (10M)
OR
- 12 Discuss the concept of hybrid system. Also present the need for hybrid system, its range and its types. (10M)
(a) Explain the principle of conversion of solar energy into heat. (5M)
(b) Give the advantages and disadvantages of flat plate collector. (5M)
OR
- 14 Write short notes on: (a) Solar pond (b) Solar arrays. (5+5)
- 15 Explain the principle, basic components and their working in a wind turbine power plant. (10M)
OR
- 16 Write short notes on the following: (a) Factors influencing site selection for wind power plants. (5M)
(b) Economics in wind mill design. (5M)
- 17 Discuss and differentiate the following methods of biogas generation: Gasification and anaerobic digestion. (10M)
OR
- 18 Explain the process of preparation of bio diesel. List the merits and applications. (10M)
- 19 Describe the construction and layout of a small scale hydroelectric power plant. (10M)
OR
- 20 Explain a Geothermal power plant with neat diagram. Mention the advantages in harnessing the energy. (10M)