R17 Regulation *Subject code: 1E8CD*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech IV Year II Semester Supplementary Examinations, June 2022

Renewable Energy Sources

(Mechanical Engineering)

Maximum Marks: 70 Date:18.06.2022 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)

1 Define conventional and non-conventional Energy with Examples.
2 List the limitations of renewable energy sources.
3 Mention the advantages of flat plate solar collector.
4 What is the average range of solar radiation received on the earth's surface during a day?
5 List the factors which led to an accelerated development of wind power.
6 What are the most favorable sites for installing wind turbines?
7 Give the origin of biomass energy.
8 Define pyrolysis.
9 What are the main advantages and disadvantages of ocean wave energy?
10 List the limitations in harnessing Geo-thermal energy.

Part-B

Answer All the following questions. (5X10M=50Marks)

11 What is the status of non-conventional energy sources in India? Explain their future prospect. 10M

OR

12 Explain the Sustainable design and development for energy sources. 10M
13 Discuss in detail about the principle of solar photo voltaic conversion. 10M

OR

14 What are the types of solar radiation measuring Instruments? Explain the working of Sunshine recorder with a neat sketch. 10M
15 Illustrate the power generation process in HAWT with its merits and demerits. 10M

OR

16 With the help of a diagram, discuss the power versus wind speed characteristics of a wind turbine. 10M
17 (a) Classify the Biomass energy conversion systems and add a note on various systems. 5M
(b) What is meant by fermentation, aerobic, anaerobic digestion? Explain. 5M

OR

18 Explain the function of biogas digestion with a neat sketch and also mention its merits and demerits. 10M
19 What is the basic principle of ocean thermal energy conversion? What are the main types of OTEC power plants? Describe their working. 10M

OR

20 (a) What is the geothermal energy? Explain its extraction process. 5M
(b) Explain Geothermal binary cycle power plant with neat diagram 5M