R20 Regulation *Subject code:3O6BE*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Regular Examinations, June/July 2023

RENEWABLE ENERGY SOURCES

(Electrical & Electronics Engineering)

Maximum Marks: 70 Date:05.07.2023 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 capital recovery factor
2 Write any four challenges of operating wind power plan
3 Draw an equivalent circuit of single photo voltaic cell
4 Write any four disadvantages of fuel cells
5 Draw speed verses torque and power characteristics of an induction generator
6 Write about speed control of induction generator?
7 Define energy density.
8 Write about super conducting magnetic energy storage.
9 Write mathematical expressions for active and reactive power injected in a grid by a voltage source inverter
10 Elucidate d-q transformation

Part-B

Answer All the following questions. **(10MX 5=50Marks)**

11 A. Discuss demand side management options. [5]
B. Explain distributed generation and its advantages. [5]

OR

12 Elucidate evaluation of Wind Intensity, topography and purpose of the energy generated. [10]

13 A. Discuss dependence of a PV cell characteristic on temperature. [5]
B. Write applications of photovoltaic solar energy. [5]

OR

14 A. Discuss aspects of hydrogen as fuel. [5]
B. Elucidate fuel cell equivalent circuit. [5]

15 A. Explain principles of operation of induction generator. [5]
B. Discuss power and losses generated in induction generator. [5]

OR

16 Discuss interconnected and stand-alone operation of induction generator. [10]

17 Discuss energy storage as an economic resource. [10]

OR

18 Discuss energy storage with lead–acid batteries, ultra capacitors and flywheels. [10]

19 Elucidate islanding and interconnection control. [10]

OR

20 Explain the principles of power injection into the grid. [10]