



R20 Regulation

305G7A

Subject code: 305G7A

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, June/July 2023

SMART GRID TECHNOLOGIES

OPEN ELECTIVE

(CSE(AI & ML))

Maximum Marks: 70

Date:06.07.2023

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 (10 X 2 Marks=20 Marks)

- 1 Give the five components of a smart grid.
- 2 List out the advantages of smart grid over conventional grid.
- 3 What does Geographic Information Systems GIS do?
- 4 What is an IED relay?
- 5 List out the needs of energy management in micro grid.
- 6 What is fuel cell and how it works?
- 7 Mention the three main challenges faced by renewable energy?
- 8 Define power quality audit.
- 9 List out the main purpose of a HAN.
- 10 What is BPL in smart grid?

Part-B

Answer All the following questions.

(5 X 10 Marks=50 Marks)

- 11 (a) Do we really need smart grids? Justify. (5 Marks)
(b) Explain the working principles of automatic meter reading system. (5 Marks)

OR

- 12 How does a Plug-in hybrid electric vehicles work? Explain. (10 Marks)

- 13 Discuss about the architecture of Intelligent Electronic Devices and incorporate in smart grid. (10 Marks)

OR

- 14 (a) Write short notes about the components of WAMS? (5 Marks)
(b) What are the components of Phase Measurement Unit in smart grid? (5 Marks)

- 15 (a) Explain the concept of micro-grid and its application. (5 Marks)
(b) Explain the plastic solar cell technology with neat diagram. (5 Marks)

OR

- 16 (a) Why do we use thin-film in solar cells? Justify. (5 Marks)
(b) How do you incorporate renewable energy? Explain. (5 Marks)

- 17 How can power quality be improved in smart grid? List out its methods. (10 Marks)

OR

- 18 (a) Why do we need power quality conditioner? Explain. (5 Marks)
(b) Briefly explain web based power quality Monitoring. (5 Marks)

- 19 (a) Describe the importance of advanced metering infrastructure. (5 Marks)
(b) Which type of communication is provided by Wi-Max? Explain. (5 Marks)
- 20 Write short notes on a) Cyber security for smart grid. (5 Marks)
b) Wide area network. (5 Marks)

OR