R22 Regulation *Subject code:4P5BA*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech V Semester Supplementary Examinations, May 2025

IOT APPLICATIONS IN ELECTRICAL ENGINEERING

(EEE)

Maximum Marks: 60 Date:23.06.2025 AN 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 (10X1M=10 Marks)		Marks	CO	BTL
1.a)	Write the principle does a piezoresistive pressure sensor use?	1M	1	L1
b)	What is the difference between precision and accuracy?	1M	1	L1
c)	What is an occupancy detector?	1M	2	L1
d)	Write the principle of operation Inductive motion detectors	1M	2	L1
e)	What is a primary characteristic of MEMS devices?	1M	3	L1
f)	Which mechanical property is crucial for the design of a MEMS beam to ensure it can withstand applied forces?	1M	3	L1
g)	What role does IoT play in the transmission level of the smart grid?	1M	4	L1
h)	What are key applications of IoT in smart grid systems?	1M	4	L1
i)	Write the basic concept of the Internet of Energy (IoE)?	1M	5	L1
j)	How is the IoE concept evaluated in terms of benefits and challenges?	1M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
2	Describe different types of pressure sensors.	10M	1	L2
	OR			
3	Describe principle operations of different temperature sensors.	10M	1	L2
4	a) Discuss different types occupancy detectors. b) Analyze the level measurement by using potentiometric method.	5M 5M	2	L2
	OR			
5	a) Discuss different types of Potentiometric position sensors. b) Analyze the Electromagnetic velocity flow sensor.	5M 5M	2	L2
6	Describe the different types of touch sensors used in MEMS applications. What are their advantages and limitations.	10M	3	L2
	OR			
7	Analyze the main fabrication techniques used in MEMS manufacturing.	10M	3	L2
8	What are some major applications of IoT in smart grid systems, and describe, how do these applications contribute to overall grid reliability,	10M	4	L2

	predictive maintenance, and demand response?			
	OR			
9	a.Describe different driving factors at generation level. b.Explain standardization & interoperability.	5M 5M	4	L2
10	Describe, how can the benefits and challenges of the Internet of Energy concept be evaluated, particularly in terms of sustainability, reliability, and scalability.	10M	5	L2
	OR			
11	Analyze, in what ways does the Energy Internet serve as an evolution of the smart grid, and what unique capabilities does it bring to energy management.	10M	5	L2