R20 Regulation *Subject code:3P6BB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, May 2025

POWER SYSTEM PROTECTION

(EEE)

Maximum Marks: 70 Date: 18.06.2025 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)		Marks	CO	BTL
1	Define relay. List out classification of relays.	2M	1	L1
2	What is meant by a circuit breaker? Explain its function?	2M	1	L1
3	Give the various types of over current relay.	2M	2	L1
4	What is an Mho relay?	2M	2	L1
5	Mention the most commonly used protection scheme for alternators	2M	3	L1
6	What are the various protections usually recommended for power transformers?	2M	3	L1
7	What about arc?	2M	4	L1
8	What is the effect of aliasing?	2M	4	L1
9	What is under voltage protection?	2M	5	L1
10	What is df/dt protection?	2M	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		Marks	CO	BTL
11	a) Derive the torque equation of electromagnetic attraction relays when used for both ac and dc operation. b) Explain the principle of operation of i) Watt hour-meter type relay ii) Induction cup type relays	5M 5M	1	L2
	OR			
12	Explain the time and current characteristics of over current protection and write its advantage?	10M	1	L2
13	Describe the construction and principle of operation of an induction type directional relay.	10M	2	L2
	OR			
14	a) Explain the merits and demerits of static relays. b) What are the types of over current relays? Sketch the characteristics and explain.	5M 5M	2	L2
15	Explain the carrier current protection with neat diagram.	10M	3	L2
	OR			

16	a) Explain the Operation principle and characteristics of MHO and off set MHO relay. b) Describe the Merz-Price circulating current system for the protection of transformers.	5M 5M	3	L2
17	Explain the amplitude and phase comparators in detail.	10M	4	L2
	OR			
18	Explain about Quadrilateral and elliptical relay characteristics.	10M	4	L2
19	Mention the advantage of over current relay and directional relays.	10M	5	L2
	OR			
20	Explain the SF6 circuit breaker with neat diagram.	10M	5	L2