R20 Regulation *Subject code: 3P6BB*

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VI Semester Supplementary Examinations, November 2025

POWER SYSTEM PROTECTION

(EEE)

Maximum Marks: 70 Date: 21.11.2025 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	What are the objectives of protection system?	2M	1	L1
2	Define restriking voltage.	2M	1	L1
3	What is an induction relay?	2M	2	L1
4	What is an Mho relay?	2M	2	L1
5	What is distance relay?	2M	3	L1
6	How do you protect generator against stator faults?	2M	3	L1
7	What is static relay?	2M	4	L1
8	How are static relays classified?	2M	4	L1
9	Write the elliptical relay characteristics.	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) An 11 KV, 500 MVA circuit breaker suddenly closes on to a fault. Determine (i) the symmetrical breaking current (ii) The Asymmetrical breaking current assuming 50% dc component;(iii) The peak making current (iv) The short –time current rating. b) Explain the construction and operation of Air Blast circuit breaker with neat diagram.	5M 5M	1	L2
	OR			
12	a) What is a vacuum circuit breaker? Explain its working principle. b) What is resistance switching and derive the expression for the value of resistance to be inserted to reduce RRRV.	5M 5M	1	L2
13	Describe the operating principle, constructional features and area of applications of reverse power or 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?	5M 5M	2	L2

15	a) What are the main faults that occur in generators? Explain the protection of generators against rotor faults. b) The neutral point of a 11 kV alternator is earthed through a resistance of 12Ω, the relay is set to operate when there is out of balance current of 0.8 A. The C.T.s have a ratio of 200/5. What percentage of the winding is protected against earth faults? What must be the minimum value of earthing resistance required to give 90% of protection to each phase?	5M 5M	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	a) List out the advantages of computer aided protection schemes. b) Write short notes on Fourier analysis?	5M 5M	4	L2
	OR			
18	Explain about Quadrilateral and elliptical relay characteristics.	10M	4	L2
19	What are the applications of HRC fuses? Discuss in detail.	10M	5	L2
	OR			
20	Explain in detail different types of system protection schemes.	10M	5	L2