



R18 Regulation

Subject code:2P7BB

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

B.Tech VII Semester Supplementary Examinations, December 2024

POWER SYSTEM PROTECTION (EEE)

Maximum Marks: 70

Date:02.01.2025

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 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)		CO	BTL
1	What is the need for back up protection	1	L1
2	Differentiate series and shunt faults	1	L1
3	Name the different types of distance relays	2	L1
4	Draw R-X loci of Impedance relay	2	L1
5	What are the consequences of loss of excitation in generators	3	L1
6	What is Buchholz relay? What for it is used?	3	L1
7	Give the classification of static relays	4	L1
8	Differentiate amplitude and phase comparators used in static relays	4	L1
9	Write the characteristics of fuse	5	L1
10	What is current chopping	5	L1

Part-B

Answer All the following questions. (5X10M=50Marks)		CO	BTL
11	Describe the working of electro magnetic relay with the help of neat sketch.10M	1	L2
OR			
12	a) Why current transformer is not operated with its secondary winding open circuited. [10M] b) Discuss the operation of micro processor based relays. [10M]	1	L2
13	What is an impedance relay? Discuss its principle of operation. Show its characteristics on R-X diagram. What is the merit of this relay for transmission line protection? [10M]	2	L2
OR			
14	a) Discuss the working of directional earth fault relay. [5M] b) Draw and explain the protection scheme for parallel feeders. [5M]	2	L2
15	a) Discuss in detail about the three zone protection of transmission lines. [5M] b) Explain the concept of carrier current protection. [5M]	3	L2
OR			
16	a) What are the different faults of transformer? Explain. [5M] b) What are different faults occurring in rotor of alternators? Explain any one of it. [5M]	3	L2

17	a) Explain the operation of static phase comparator used in static relays. [5M] b) Discuss the operation of static differential relay. [5M]	4	L2
	OR		
18	Draw the block diagram and explain the operation of micro processor based digital relays? [10M]	4	L2
19	a) Explain the working of an SF6 circuit breaker with the help of diagram? [5M] b) A circuit breaker is rated at 1500A, 2000MVA, 33kV, 3 sec, 3 phase oil circuit breaker. Find the normal rated current, breaking current, making current and shot time current rating? [5M]	5	L2
	OR		
20	a) Describe the operational phenomena of an air blast Circuit breaker. [5M] b) Explain the concept of resistance switching. Also list out its drawbacks. [5M]	5	L2