



R18 Regulation

Subject code: 2P7BB

# TKR COLLEGE OF ENGINEERING AND TECHNOLOGY

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

## B.Tech VI Semester Supplementary Examinations, November 2023

### POWER SYSTEM PROTECTION (Electrical & Electronics Engineering)

Maximum Marks: 70

Date: 06.12.2023 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 (10X2M=20 Marks)

1	What is the need for back up protection	L1
2	Differentiate series and shunt faults	L2
3	Name the different types of distance relays	L1
4	List out few salient points of directional relays	L1
5	What are the consequences of loss of excitation in generators	L1
6	What is Buchholz relay? What for it is used?	L2
7	Write the importance of impedance relays?	L1
8	List the demerits of static relays over electromagnetic relays	L1
9	Write the characteristics of fuse	L2
10	What is current chopping	L1

#### Part-B

Answer All the following questions. (5X10M=50Marks)

11	A. Explain the need of power system protection. [5] B. Discuss the principle of operation of thermal relays. [5]	L2 L3
OR		
12	A. Why current transformer is not operated with its secondary winding open circuited. [5] B. Discuss the operation of micro processor based relays. [5]	L2 L3
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? [10]	L3
OR		
14	A. Discuss why R-X loci of impedance relay is a circle having center as origin? [5] B. Draw and explain the circuit for the protection of ring main system. [5]	L2 L3
15	A. Discuss in detail about the three zone protection of transmission lines. [5] B. Explain the concept of carrier current protection. [5]	L3 L2
OR		
16	A. What are the different faults of transformer? Explain. [5] B. What are different faults occurring in rotor of alternators? Explain any one of it. [5]	L2 L3

17	A. Explain the operation of static phase comparator used in static relays. [5] B. Discuss the operation of static differential relay. [5]	L3 L2
	OR	
18	Draw the block diagram and explain the operation of micro processor based digital relays? [10]	L3
19	A. Explain the working of an SF6 circuit breaker with the help of diagram? [5] 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? [5]	L3 L2
	OR	
20	A. Describe the operational phenomena of an air blast Circuit breaker. [5] B. Explain the concept of resistance switching. Also list out its drawbacks. [5]	L3 L3