



Regulation R17

Subject code: 1P6BC

TKR COLLEGE OF ENGINEERING AND TECHNOLOGY
(Autonomous, Accredited by NAAC with 'A' Grade)

B.Tech III Year II Semester Supplementary Examinations, June 2022
SWITCHGEAR AND PROTECTION
(EEE)

Maximum Marks: 70

Date: 20.06.2022 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)

- 1 How a circuit breaker is different from switch?
- 2 What is fault clearance time?
- 3 If the pickup value of a relay is 8A, the fault current is 30A. Find its PSM?
- 4 What is differential relay and its advantages
- 5 Write the list of faults that may occur on the stator side of an alternator?
- 6 Which type of relays are used in merz-price protection system for alternator
- 7 What type of relays are suitable for the protection of radial feeders?
- 8 What is differential protection of bus bars
- 9 What do you mean by grounding or earthing?
- 10 What is a voltage surge?

Part-B

Answer All the following questions.

(10M X 5=50Marks)

- 11 a) Compare the performance of sf6 gas with air when used for circuit breaking. [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. [5]
- OR
- 12 Explain briefly the following types of air-blast circuit breakers (i) Axial-blast type (ii) Cross-blast type. [10]
- 13 a) Explain the differences between differential relay and a percentage differential relay. [5]
b) Draw and explain the time versus PSM curve with an example? [5]
- OR
- 14 Explain with a neat sketch the operation of an induction type over current relay. What are the functions of current and time multiplier settings associated with such a relay? [10]
- 15 a) Explain briefly about stator fault protection in generator. [5]

b) How do you protect transformer against incipient faults? [5]

OR

16 a) Explain distance protection of a transmission line. [5]

b) Explain bus bar differential protection scheme with neat diagram. [5]

17 a) Explain the resistance grounding scheme and mention its advantages and disadvantages. [5]

b) What is reactance grounding? Mention its disadvantages. [5]

OR

18 a) State the difference between equipment earthing and neutral earthing. [5]

b) Explain in detail the solid grounding scheme for three-phase systems. Also mention its advantages and disadvantages. [5]

19 Write short notes on the following [10]

i) Causes of over voltages

ii) switching surges

iii) Lightning phenomenon

OR

20 a) Explain about Zinc-oxide lightning arrester. [5]

b) Explain Volt-Time characteristics of surge arrester with neat sketch. [5]