

ANURAG Engineering College

(An Autonomous Institution)

III B.Tech I Semester Supplementary Examinations, December - 2024

SWITCHGEAR AND PROTECTION**(ELECTRICAL AND ELECTRONICS ENGINEERING)****Time: 3 Hours****Max. Marks: 75****Section – A (Short Answer type questions)****(25 Marks)****Answer All Questions**

	Course Outcome	B.T Level	Marks
1. Paraphrase Restriking Voltage and Recovery voltages.	CO1	L2	2M
2. Discuss the Elementary principles of arc interruption	CO1	L2	3M
3. Distinguish between DMT and IDMT types of relays	CO2	L2	2M
4. Illustrate the need of phase comparators in static relay	CO2	L2	3M
5. List out various protective schemes for a generator	CO3	L1	2M
6. Restate the importance of Buchholtz relay in transformer protection.	CO3	L2	3M
7. Graphically illustrate the zone protection	CO4	L1	2M
8. Predict the requirements for line protection	CO4	L2	3M
9. List various methods of neutral grounding	CO5	L1	2M
10. Outline the significance of BIL	CO5	L2	3M

Section B (Essay Questions)**Answer all questions, each question carries equal marks.****(5 X 10M = 50M)**

11. A) Explain in detail the construction and operation of SF6 circuit breaker.	CO1	L2	10M
OR			
B) In a 132 kV system, the reactance and capacitance up to the location of circuit breaker is 4Ω and $0.035 \mu F$, respectively. A resistance of 400 ohms is connected across the contacts of the circuit breaker. Determine the following: i) Natural frequency of oscillation ii) Damped frequency of oscillation iii) Critical value of resistance which will give no transient oscillation iv) The value of resistance which will give damped frequency of oscillation, one-fourth of the natural frequency of oscillation.	CO1	L2	10M
12. A) Explain the construction and operation of induction disc type relay and derive the torque equation	CO2	L2	10M
OR			
B) Illustrate the constructional and operational difference between Static Relays and Electromagnetic Relays	CO2	L3	10M
13. A) Explain the differential protection of transformer in detail.	CO3	L2	10M
OR			
B) Investigate the Buchholtz relay Protection scheme in transformer	CO3	L2	10M
14. A) Explain the differential protective scheme of BUS-BAR	CO4	L3	10M
OR			

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| B) | Explain the protection of transmission line utilizing the impedance relay scheme | CO4 | L2 | 10M |
| 15. A) | Illustrate the Effects of Ungrounded Neutral on system performance. List the remedies for the same. | CO5 | L3 | 10M |
| OR | | | | |
| B) | Explain in detail the protection of generator against lightning over voltages | CO5 | L2 | 10M |