QP Code: RN22BTECH283 | Reg. No | | | | | | | | | | | AR 22

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Fifth Semester - Regular) Examinations, November – 2024

22BELPC35004/22BEEPC3500 – Switchgear & Protection

(EE/EEE)

Time: 3 hrs | Maximum: 70 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	Define Restriking Voltage and Recovery Voltage,	CO1	K1
b.	Mention the advantages of static relays over electromagnetic relays.	CO2	K1
c.	What are the faults likely to occur in transformer?	CO3	K1
d.	Define arching ground.	CO4	K1
e.	Define Insulation coordination.	CO5	K1

PART – B(15 x 4=60 Marks)

Answer ***ALL*** the questions		Marks	CO #	Blooms Level
2. a.	Explain in detail about resistance switching.	8	CO1	K2
b.	For a 132 kV system, the reactance and capacitance up to the location of the circuit breaker is 3 ohms and 0.015 m F, respectively. Calculate the following: (a) The frequency of transient oscillation (b) The maximum value of restriking voltage across the contacts of the circuit breaker (c) The maximum value of RRRV	7	CO1	K2
	(OR)			
c.	With a neat sketch explain in detail about air break circuit breaker.	8	CO2	K2
d.	With a neat sketch explain in detail about Vacuum circuit breaker.	7	CO2	K2
3.a.	Describe in detail about polarized moving iron relays.	8	CO2	K3
b.	Describe in detail about percentage differential relay.	7	CO2	K3
	(OR)			
c.	Explain in detail with R-x diagram about distance relays.	15	CO2	K2
4.a.	Explain in detail about restricted earth-fault protection by differential system	8	CO3	K2
b.	An 11 kV, 100 MVA alternator is grounded through a resistance of 5 W. The CTs have a ratio 1000/5. The relay is set to operate when there is an out of balance current of 1 A. What percentage of the generator winding will be protected by the percentage differential scheme of protection?	7	CO3	K3
	(OR)			
c.	A three-phase, 11 kV/132 kV, Δ-Y connected power transformer is protected by differential protection. The CTs on the LV side have a current ratio of 500/5. What must be the current ratio of the CTs on the HV side and how should they be connected.	8	CO3	K3
d.	Write in detail about Buchhloz relay.	7	CO3	K2
5.a.	With a neat sketch explain in detail about resistance grounding.	7	CO4	K2

b.	A star connected 3-phase, 12 MVA, 6.6kV alternator is protected by circulating current protection, the star being earthed via a resistance ‘r’ calculate the valve of earthling resistance if 84% of the stator winding is protected against earth faults. Assume an earth fault setting of 20%. Neglect the impedance of the alternator winding.	8	CO4	K2
	(OR)			
c.	Explain in detail about valve type lightning arrester.	8	CO4	K2
d.	Explain merz price protection system.	7	CO4	K2

--- End of Paper ---