

Time: 2hour 30 minutes Max. Marks: 80

Q1.	Choose the correct option for following questions. All the Questions are compulsory and carry equal marks
1.	An isolator is installed _____.
Option A:	to operate the relay of C.B.
Option B:	as substitute for C.B.
Option C:	generally, on one side of a C.B.
Option D:	generally, on both sides of a C.B.
2.	Circuit breakers usually operate under _____.
Option A:	steady short circuit current
Option B:	sub transient state of short circuit current
Option C:	transient state of short circuit current
Option D:	Zero sequence current
3.	The relay operating speed does not depend upon _____.
Option A:	The spring tension
Option B:	The rate of flux built up
Option C:	Armature core airgap
Option D:	Area of the moving sector
4.	Plug setting of electromagnetic relay can be altered by varying _____.
Option A:	Number of amperes turns
Option B:	Air gap of magnetic path
Option C:	Adjustable back stop
Option D:	Time setting
5.	A single phasing relays are used for protection of _____.
Option A:	Single phase motor only
Option B:	Two phase motor only
Option C:	Two phase motors running in parallel
Option D:	Three phase motor only
6.	Carrier current protection scheme is normally used for _____.
Option A:	HV transmission only
Option B:	HV cables only
Option C:	HV transmission and cables
Option D:	LV transmission only
7.	The Overhead ground wires are used to protect a transmission line against _____.
Option A:	Line to ground faults
Option B:	Arcing earths
Option C:	Voltage surges due to direct lightning stroke
Option D:	High-voltage oscillations due to switching

8.	The Phase comparison relay has merit that ____.
Option A:	Its operation does not depend upon the direction of power flow
Option B:	It can operate even for low value of fault current
Option C:	Correct relay action can be obtained by using series capacitor on the line
Option D:	It can be used to compare scalar quantities as well.
9.	The number of pilot wires required for protecting 3 phase transmission lines using Translay system of protection is ____.
Option A:	6
Option B:	4
Option C:	3
Option D:	2
10.	The ____ relay is used for phase fault on short transmission line.
Option A:	Induction type
Option B:	Reactance
Option C:	Impedance.
Option D:	Admittance

Q2. (20 Marks)	Solve any Two Questions out of Three	10 marks each
A	Draw and explain construction and working of Pantograph Isolators.	
B	Draw and explain construction, working and operating characteristic of HRC Fuse.	
C	Explain working principle of induction type of relays and its characteristics.	
Q3. (20 Marks)	Solve any Two Questions out of Three	10 marks each
A	Explain the phenomenon of current chopping and its effect in the circuit breakers.	
B	Explain Numerical Relay in detail.	
C	Explain phase comparison carrier current protection	
Q4. (20 Marks)	Solve any Two Questions out of Three	10 marks each
A	Explain REF protection for alternator. How 100% winding is protected in an alternator?	
B	Explain the operation of Harmonic restraint relay.	
C	Explain the effect of power swing in distance relay.	