END SEMESTER EXAMINATION, 2021

(New and Old syllabus)

Semester: VI (Electrical)

Subject code: El-603

Subject: Switchgear and Protection

Full Marks: 56 (Part A-10 + Part B-46)

Duration: 2 hours 30 minutes

Instruction:

All Questions on Part A and Part B are compulsory

	PART-A		
MARKS-10			
Question	Questions	Marks	
nos.			
Question	Fill in the blanks:	1x5=5	
no. 1			
1a	Arcing ground can be prevented by earthing the		
1b	If the length of the arc increases, its resistance is		
1c	The value of fusing factor is always than 1.		
1d	SF ₆ provides better arc quenching because of its property.		
1e	Buchholz relay is used for the protection of		
Question	Choose the correct answer	1x5=5	
no. 2			
2a	Purpose of backup protection is		
(i) To increase the speed		
```	ii) To increase the reach		
	iii) To guard against failure of primary		
2b	Which of the following circuit breakers have the minimum operating		
	voltage?		
(i) SF			
()	ir-Blast (iv) Minimum Oil		
2c	Both voltage and current signals are required for		
., .	lain overcurrent relay (ii) a differential relay		
	lirectional relay (iv) a biased differential relay		
2d	Which of the following is a non-linear diverter?		
	ulsion type arrester (ii) Valve type arrester		
	trolytic type arrester (iv) Rod gap arrester		
2e	Resistance switching is normally resorted to in case of		

- (i) air-blast CB
- (ii) bulk oil CB
- (iii) low oil CB
- (iv) all types of CBs

PART-B MARKS: 46		
Question Nos.	Questions	Marks
Question		
no.3		
(i)	Compare between HRC fuse and a circuit breaker	3
(ii)	Define the following:	3
	a. Fusing factor	
	b. Prospective current	
(iii)	Define the following in the context of relays:	3
	Pick-up level and reset level	
(iv)	Define the following terms:	3
	a) Recovery voltage	
	<ul> <li>b) Restriking voltage and Active Restriking voltage</li> </ul>	
(v)	State the Universal Torque Equation and it's representation for Over-	3
	current Relay and Impedance Relay	
Question		
no.4		
(i)	List the methods used for Over-voltage Protection	4
(ii)	Describe the Lightning Phenomenon	4
(iii)	Explain Current Chopping	4
(iv)	What is arcing ground? How is it avoided?	4
Question		
no. 5		
(i)	Describe the protection scheme used for Parallel Feeders.	5
(ii)	Describe with a neat diagram the operation of Vacuum Circuit Breaker	5
(iii)	Explain the working principle of Differential Relay? Why is it called	4+1=5
	Percentage/Biased Differential Relay?	