

GOVERNMENT POLYTECHNIC ,BARGARH

Department Of Electrical Engineering

Semester: 6th. DIPLOMA

Subject: SGPD

Branch: Electrical Engineering

Session: (Summer)

No of Period :75 (60 L+ 15 T)

Name of Faculty: NITESH KU. ACHARYA

Week	Period	Topics to be covered
1	1	INTRODUCTION TO SWITCHGEAR: - Essential Features of switchgear.
	2	Switchgear Equipment
	3	Bus-Bar Arrangement. Switchgear Accommodation.
	4	Short Circuit
	5	Recall of period no. 1 to 4
2	6	Faults in a power system
	7	FAULT CALCULATION Symmetrical faults on 3-phase system.
	8	Limitation of fault current. Percentage Reactance.
	9	Percentage Reactance and Base KVA.
	10	Recall of period no. 6 to 9
3	11	Short – circuit KVA. Reactor control of short circuit currents.
	12	Location of reactors.
	13	Steps for symmetrical Fault calculations.
	14	Solve numerical problems on symmetrical fault.
	15	Recall of period no. 11 to 14
	16	Solve numerical problems on symmetrical fault.

4	17	FUSES Desirable characteristics of fuse element. Fuse Element materials.
	18	Types of Fuses and important terms used for fuses.
	19	Low and High voltage fuses
	20	Recall of period no. 16 to 19
5	21	Current carrying capacity of fuse element. Difference Between a Fuse and Circuit Breaker.
	22	CIRCUIT BREAKERS Definition and principle of Circuit Breaker
	23	Arc phenomenon and principle of Arc Extinction.
	24	Methods of Arc Extinction.
	25	Recall of period no. 21 to 24
6	26	Definitions of Arc voltage, Re-striking voltage and Recovery voltage.
	27	Classification of circuit Breakers. Oil circuit Breaker and its classification
	28	Plain brake oil circuit breaker.
	29	Arc control oil circuit breaker.
	30	Recall of period no. 26 to 29
7	31	Low oil circuit breaker Maintenance of oil circuit breaker.
	32	Air-Blast circuit breaker and its classification
	33	Sulphur Hexa-fluoride (SF ₆) circuit breaker.
	34	Vacuum circuit breakers.
	35	Recall of period no. 31 to 34
8	36	Switchgear component.
	37	Problems of circuit interruption
	38	Resistance switching. Circuit Breaker Rating.

	39	PROTECTIVE RELAYS Definition of Protective Relay, Fundamental requirement of protective relay.
	40	Recall of period no. 36 to 39
9	41	Basic Relay operation Electromagnetic Attraction type & Induction type
	42	Definition of following important terms. Pick-up current. Current setting. Plug setting Multiplier. Time setting Multiplier
	43	Classification of functional relays
	44	Induction type over current relay (non-directional)
	45	Recall of period no. 41 to 44
10	46	Induction type directional power relay.
	47	Induction type directional over current relay.
	48	Differential relay Current differential relay Voltage balance differential relay
	49	Types of protection
	50	Recall of period no. 46 to 49
11	51	PROTECTION OF ELECTRICAL POWER EQUIPMENT AND LINES Protection of alternator, Differential protection of alternators
	52	Balanced earth fault protection.
	53	Protection systems for transformer
	54	Buchholz relay
	55	Recall of period no. 51 to 54
12	56	Protection of Bus bar. Protection of Transmission line.
	57	Different pilot wire protection (Merz-price voltage Balance system)
	58	Explain protection of feeder by over current and earth fault relay
	59	PROTECTION AGAINST OVER VOLTAGE AND LIGHTING Voltage surge and causes of over voltage
	60	Recall of period no. 56 to 59
	61	Internal cause of over voltage. External cause of over voltage (lighting)

13	62	Mechanism of lightning discharge
	63	Types of lightning strokes. Harmful effect of lightning
	64	Lightning arresters and Type of lightning Arresters Rod-gap lightning arrester.
	65	Recall of period no. 61 to 64
14	66	Horn-gap arrester & Valve type arrester
	67	Surge Absorber
	68	STATIC RELAY Advantage of static relay
	69	Instantaneous over current relay
	70	Recall of period no. 65 to 69
15	71	Principle of IDMT relay
	72	Previous year questions discussion
	73	Previous year questions discussion
	74	Previous year questions discussion
	75	Previous year questions discussion