PUNJAB INSTITUTE OF TECHNOLOGY, GTB GARH (MOGA)

Department of Electrical Engineering

LAB - POWER SYSTEM - II

S. No.	Experiment Name	Specifications
1	To study the Performance of a Transmission Line. Also to find its ABCD parameters.	Transmission line model must consist of 4 actions of transmission on-line operatable at 220 V with different rating of current reconnected in network. A continues variable power supply with digital meters mounted on front panel fitted in m.s. sheet box complete with patch cords for inter connection & Manual. Detailed calculation must be supplied alongwith the setup.
2	To find the Operating Characteristics of Fuse (HRC or open type)	(a) To study the construction of the Relay and finding of its operating characteristics. (b) To study the time-current characteristics for given fuse. Appratus Required: 1. Thermal Relay - 1 No.; 2. Digital AC Voltmeter 0-300 V, - 1 No. ; 3. Digital AC Ammeter 0-10 A - 1 No. ; 4. Push Button - 2 No. ; 5. Rotary Switch 6. DP Isolator ; 7. Multipoint Relay with transformer & rectifier supply - 1 No. ; 8. 1 Ph Variac - 1 No.; 9. Loading CT - 1 No. ; 10. Digital Time Totaliser'- 2 No. ; 11. Indicating Light - One each; 12. Fuse Holder - 2 No All the accessories and Relays must be fitted on sheet fixed to M.S. box cabinet almirah type suitable for table mounting with provision for lock and key arrangement.
3	To find the Resistance of Earth Electrode by 3 Electrode Method.	Setup for the measurement the resistance of the given Earth Electrode using Megger Earth Tester with earth electrodes.
4	To find the Resistivity of Earth using 4 Electrode Method.	Set up for the measurement of Earth Resistivity. This must have Resistivity Tester kit with four electrodes

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5	To Study the Radial Feeder Performance when a). Fed at One End b). Fed at Both Ends	(A) EXPERIMENT KIT TO STUDY THE PERFORMANCE CHARACTERISTICS OF A TYPICAL DC DISTRIBUTION SYSTEM (RADIAL CONFIGURATION). DC Distribution network must be operatable at specific voltage and current rating. It is also sisting of 5 rdial distribution with with five digital ammeter and single voltmeter (B) EXPERIMENT KIT TO STUDY THE PERFORMANCE CHARACTERISTICS OF A TYPICAL DC DISTRIBUTION SYSTEM (RING CONFIGURATION). DC Distribution network must be operatable at specific voltage and current rating. It is also sisting of 5 rdial distribution with with five digital ammeter and single voltmeter
6	To Simulate Different Types of Faults on Transmission Line using Demostration with Panel	TO STUDY THREE PHASE FAULTS This must have shunt type of fault. These faults are characterized by increase in current and fall in voltage. This set up must be able to create the fault conditions Following accessories required 1. Three Phase Over Current & Earth Fault Relay, Static Type Prok dv's Make 2. Digital MI Voltmeter 3. Neon Lamp 4. TP Switch 5. Insulating Terminals 6. Transformers Three Phase 7. Line Impedances 8. Variable Voltage Source 9. Digital Clamp on Meter All the accessories will be fitted on Bakelite sheet fixed to M.S. box cabinet almirah type suitable for table mounting with provision for lock and key arrangement.

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7	To Study Different Types of Insulators.	The display board consisting of mica board fitted on wooden plank consisting of following items:- 1. Different type of insulators : Pin type, shackle type etc. 2. Different type of cables : Armored cables of different size. 3. Contactors. 4. NO NC Push buttons 5. Relays : Electromagnetic & Electronic type. 6. C.T. : Round type & WPL type.
8	Study of Characteristics of Over Current Relay	Electromachanical Type I.D.M.T. OVER CURRENT RELAY (a) To study the construction of the Relay. (b) To find the operating characteristics of the Relay for two time and current settings. (c) To determine Reset ration. Over Current Relay Set Kit This relay setup is designed to test the over current relay with IDMT characteristics. It consists of:- Variable AC Source - 1 No. Digital AC Ammeter to measure the current input in Amp - 1 No. Automatic Trip time measurement circuit (ATTM Circuit) is provided. - 1 No. START Push Button is provided in ATTM Circuit - 1 No. STOP Push Button is provided in ATTM Circuit - 1 No. Digital Timer is provided in ATTM Circuit to measure trip time. - 1 No. Reset switch is provided in front panel to restart the digital stop clock. 1 No.

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9	Study of Characteristics of Earth Fault Protection relay	APPARATUS REQUIRED 1.Over Current & Earth Fault Relay three phase Type CDG (ALSTOM AREVA/ABB make) Electromechanical type. 2. Digital MI Ammeter, 0-10 A. 3. Digital MI Voltmeter 0-500 V 4. Loading C.T. 5. Timer 6. Variable Current Source 7. Neon lamp, 230 V. All the accessories and Relays must be fitted on sheet fixed to M.S. box cabinet almirah type suitable for table mounting with provision for lock and key arrangement.
10	To Study the Performance of Under Voltage and Over Voltage Relay	(A) STUDY OF OVER VOLTAGE RELAY Electro Mechanical, inverse time over voltage protection of AC circuits, capacitors and machines such as generator and synchronous motors. APPARATUS REQUIRED (i) Model VDG-11 Over voltage relay ALSTOM AREVA (ii) Digital MI Voltmeter (iii) Variable Voltage Source (iv) Neon Lamp (v) Digital Timer (B) STUDY OF UNDER VOLTAGE RELAY Electro Mechanical, inverse time under voltage protection of AC circuits, capacitors, rectifiers and machines such as Induction motors. APPARATUS REQUIRED 1. Model VDG-13 Under voltage relay ALSTOM AREVA make 2. Digital MI Voltmeter 3. Variable Voltage Source 4. Neon Lamp 5. Digital Timer All the accessories and Relays must be fitted on sheet fixed to M.S. box cabinet almirah type suitable for table mounting with provision for lock and key arrangement.

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11	To Study the Characteristics of Bimetalic Miniature Circuit Breakers	Experimental setup consisting of MCB, Digital AC Voltmeter, Digital AC Ammeter, Push Button, Rotary Switch, DP Isolator, Multipoint Relay with transformer, 1 Ph Variac, Loading CT, Digital Time Totaliser, Indicating Light, Fuse Holder. All the accessories must be fitted on sheet fixed to M.S. box cabinet almirah type suitable for table mounting with provision for lock and key arrangement.
12	To Find the Breakdown Strength of Transformer oil.	A transformer Oil Breakdown Test Set is an equipment that measures the Di-electric Strength of the oil. Complete apparatus with have testing kit and samples of oil
13	To Demonstrate the Operation of a Oil Circuit Breaker.	Experimental setup consisting of Oil Circuit Breaker with control panel consisting of DP MCB, Digital MI Voltmeter, Digital MI Ammeter, Single Phase Current Source. All the accessories will be fitted on sheet fixed to M.S. box cabinet almirah type suitable for table mounting.
14	To Study the Characteristics of Distance (Impedance, Reactance & Mho) Relay	APPARATUS REQUIRED This setup is use to study simple type of Distance Protection Relay (Electronic Static type) so that the student may understand the Impedance setting as done in field for Zone-1, Zone-2 and Zone-3. Similarly student can understand time setting in these zones. Thus for testing distance protection relay, we will be supplying :- (i) Fault Impedance Box (ii) Supply Box, C.T. Box (iii) Controlling Box All these accessories are housed in M.S. Box suitable for table mounting complete with patch cords and manual.

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