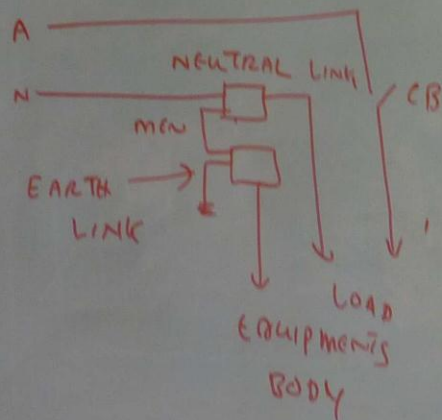


## EARTHING SYSTEM

PROTECTION FOR EARTH LEAKAGE AT IRON BODY OF EQUIPMENTS.

### EARTH FAULTS

- ON SUPPLY SYSTEM TO INSTALLATION
- ON AN ADJACENT BUILDINGS
- IN WIRING ACCESSORIES
- WITHIN APPLIANCES
- IN LUMINAIRES (OR) SWITCH BOARD



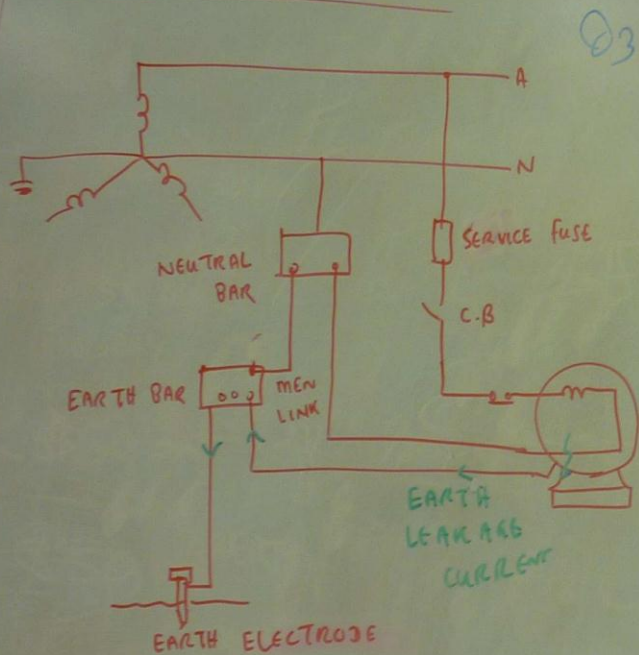
### SUPPLY SYSTEM FAULT

- REVERSED POLARITY OF SUPPLY
- OPEN CIRCUIT ON SUPPLY NEUTRAL

IN SUPPLY SYSTEM, OVER LOAD (OR) SHORT CIRCUIT FAULTS ARE PROTECTED BY CIRCUIT BREAKER (OR) FUSE. BUT EARTH FAULT CAN NOT BE PROTECTED BY CIRCUIT BREAKER (OR) FUSE

- TO PROTECT THE EARTH FAULT
  - (1) EARTHING TO METALLIC BODIES
  - (2) RCD (RESIDUAL CURRENT DEVICE) TO BE INSTALLED

## INSTALLING THE EARTHING SYSTEM



FACTORS INFLUENCING THE MAGNITUDE OF EARTH FAULT CURRENT

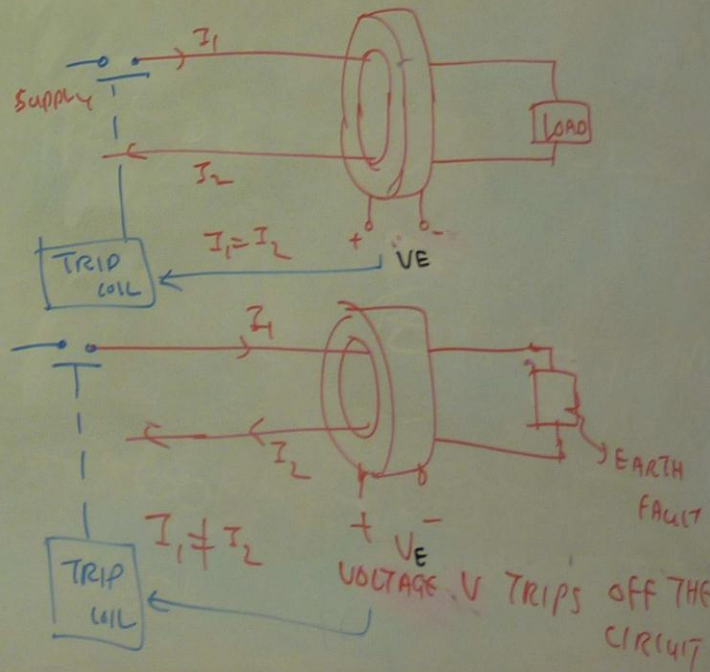
- Low impedance supply source
- Low impedance supply main & installation
- RESISTANCE OF EARTH FAULT
- RESISTANCE OF EARTHING SYSTEM.

## MEN SYSTEM

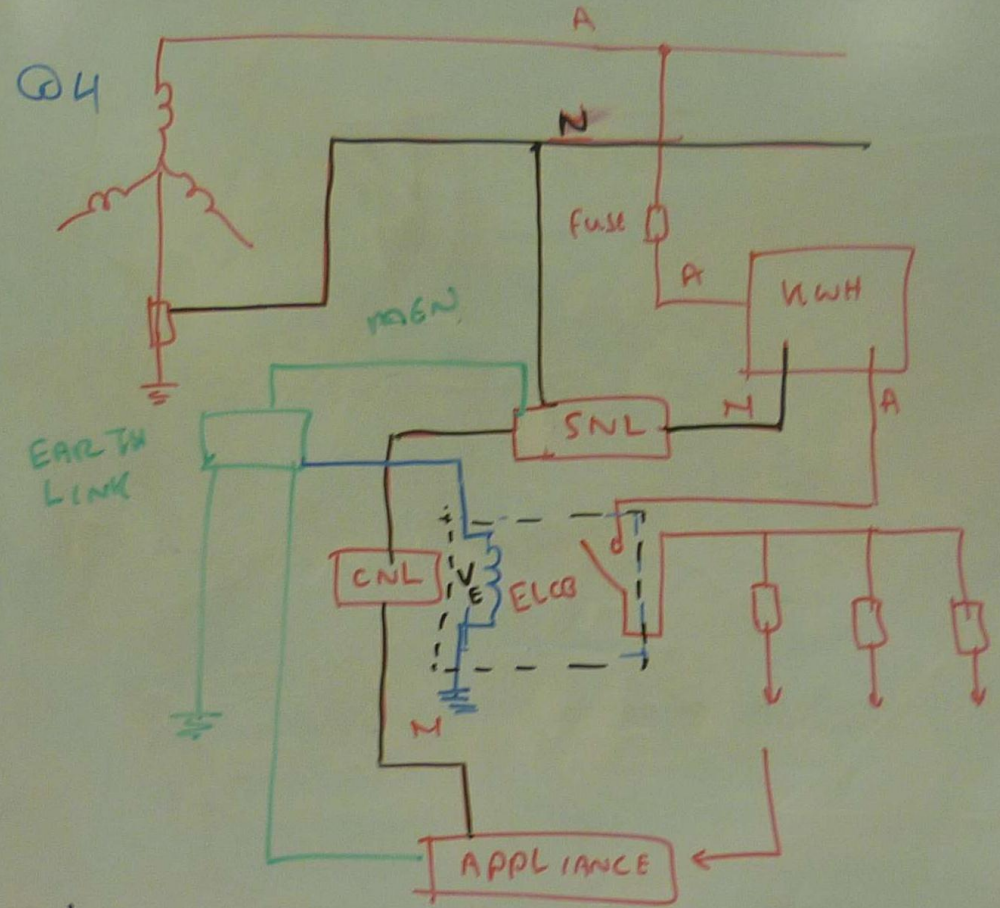
A CONNECTION BETWEEN THE NEUTRAL AND THE EARTHING SYSTEM AT EACH CONSUMER'S INSTALLATION.

ELCB - (EARTH LEAKAGE CIRCUIT BREAKER)

IF THE POTENTIAL OF EARTHING SYSTEM REACHES 20 TO 26V TRIP COIL OPERATE



CONNECTION OF ELCB

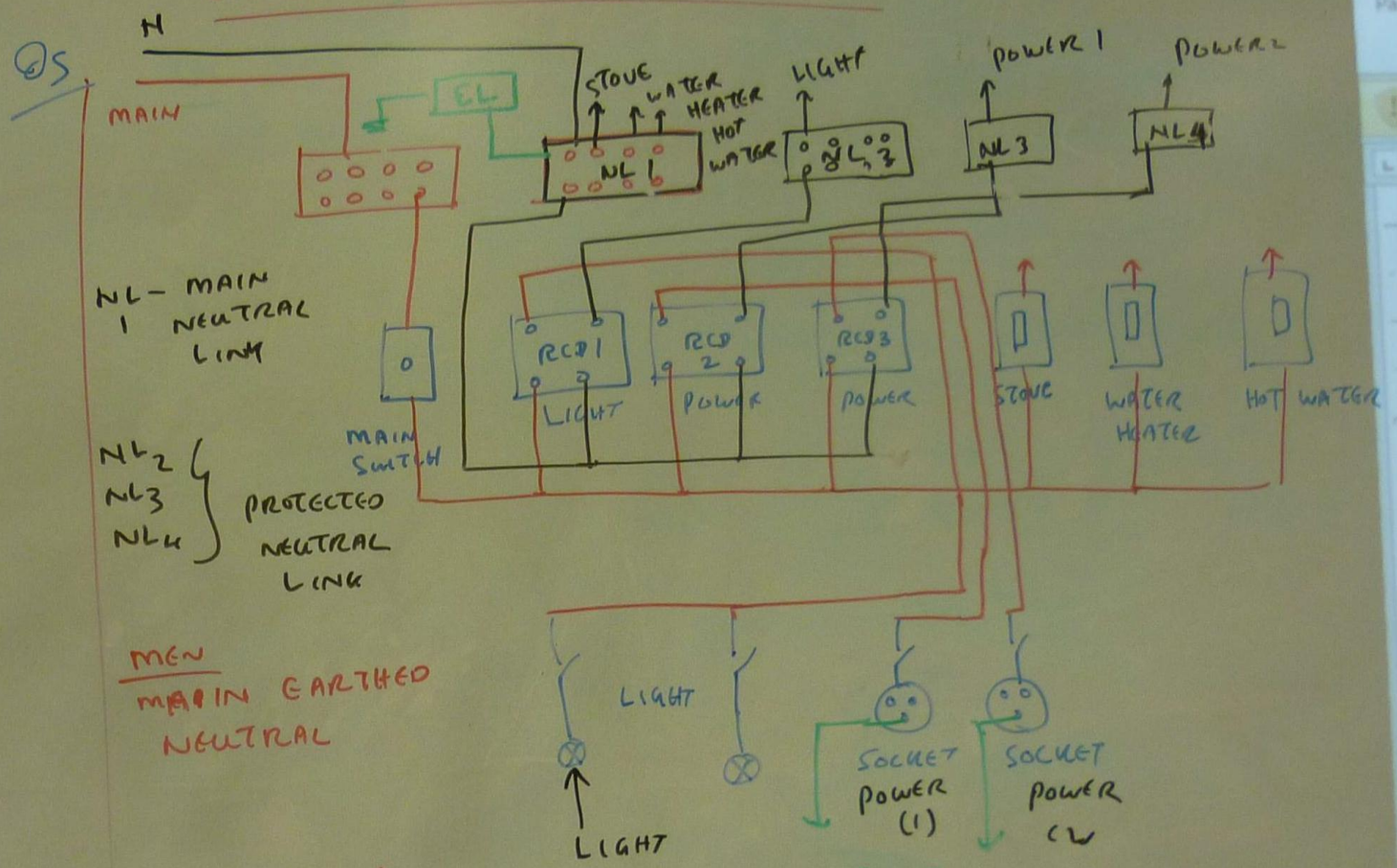


$V_E = 0$  AT NORMAL CONDITION

$V_E$  IS PRESENT AT EARTH FAULT CONDITION

$V_E$  TRIPS OFF ELCB CONTACT

# CIRCUIT DIAGRAM OF MAIN SWITCH



NL - MAIN NEUTRAL LINK

NL2  
NL3  
NL4 } PROTECTED NEUTRAL LINK

MEN  
MAIN EARTHED NEUTRAL

SNL - SUPPLY NEUTRAL LINK

CNL - CONSUMER NEUTRAL LINK

ELCB - EARTH LEAKAGE CIRCUIT BREAKER

100

# TUTORIAL

① WHAT KIND OF EARTH FAULTS CAN HAPPEN IN THE SYSTEM?

② HOW IS EARTH FAULT PROTECTED?

③ SKETCH THE INSTALLATION OF EARTHING SYSTEM

④ EXPLAIN THE OPERATION OF ELCB WITH CONNECTION DIAGRAM

⑤ PROVIDE THE CONNECTION DIAGRAM OF MAIN SWITCH BOARD THAT INCLUDES THE FOLLOWINGS

(a) MAIN SWITCH

(b) RCD FOR LIGHT

(c) RCD FOR TWO POWER SOURCES

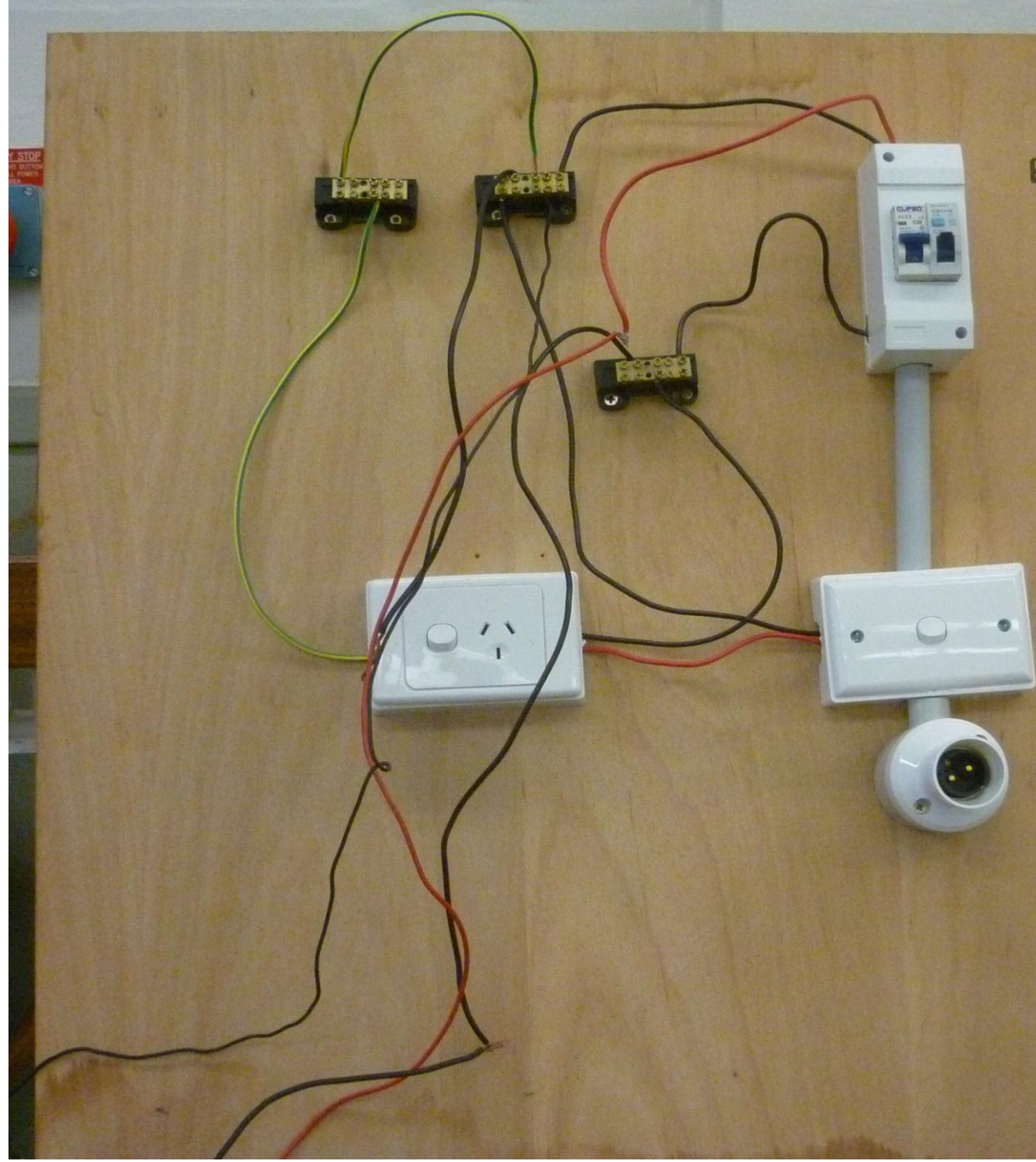
(d) STOVE

(e) WATER HEATER

(f) HOT WATER SYSTEM

STOP  
BUTTON  
POWER

PM RECEIVER



ELECTRICAL  
ENGINEERING  
STUDENT'S  
DESIGN

PLEASE  
DO NOT  
REMOVE  
WITHOUT  
NOTIFYING JOE

2



STUDENTS DESIGN PROJECT

PROPERTY OF ULTIM ELECTRICAL ENGINEER (IN K2.11)

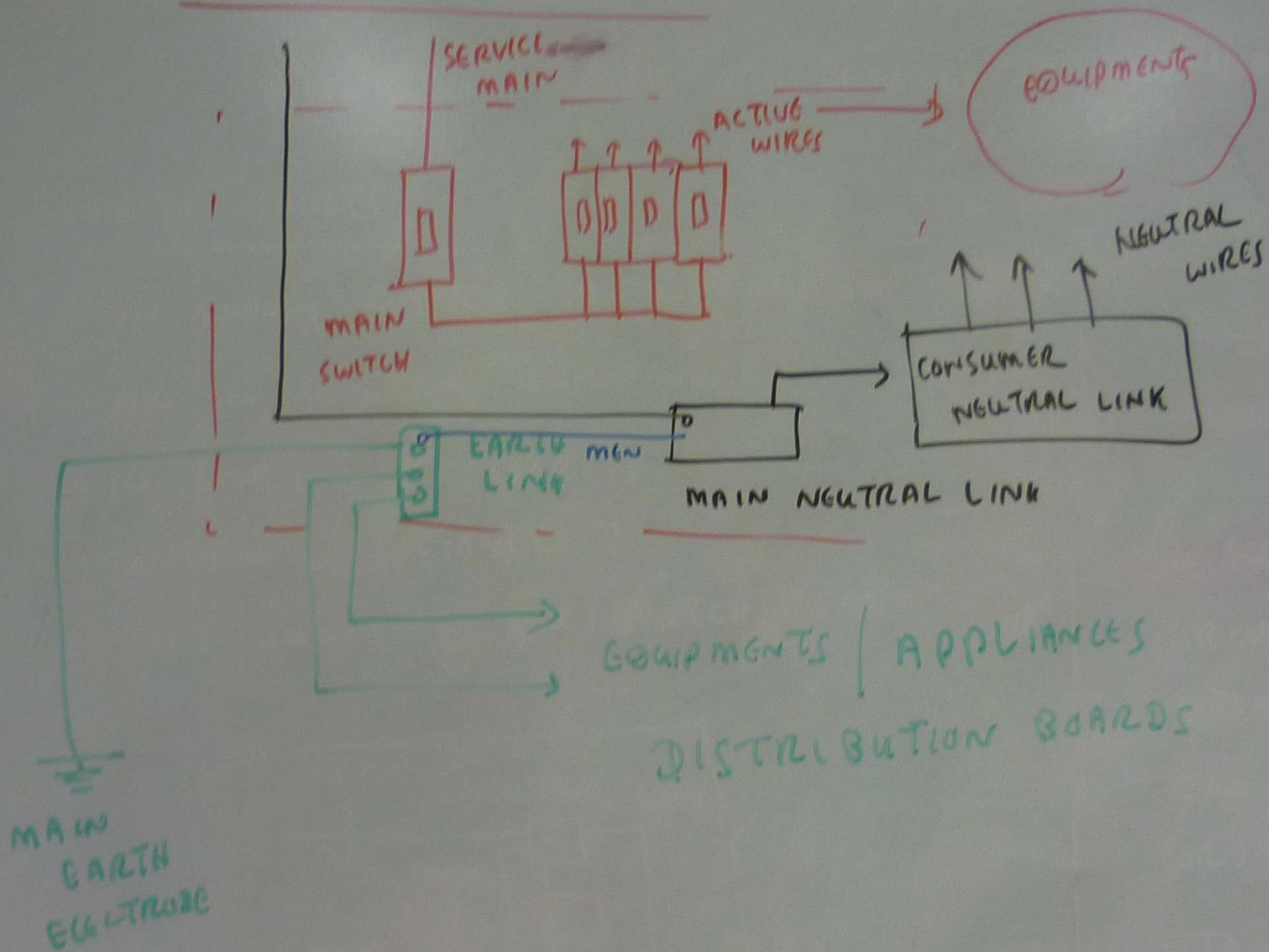
PLEASE DO NOT REMOVE WITHOUT NOTIFYING

JOE

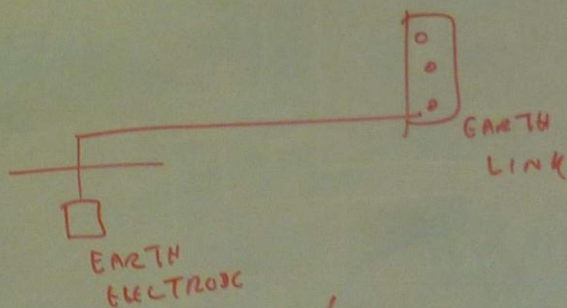
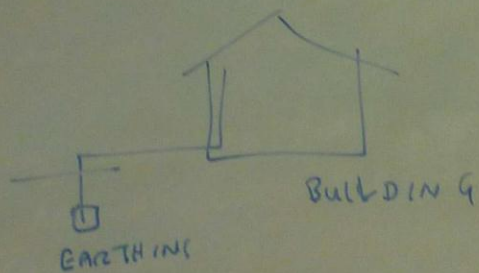
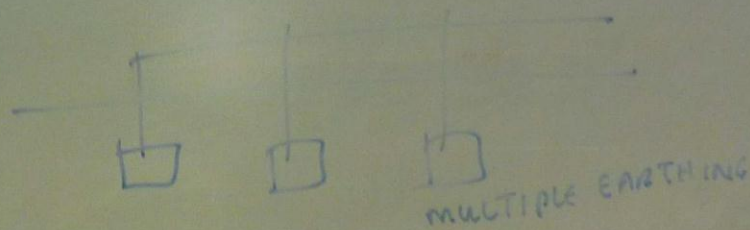
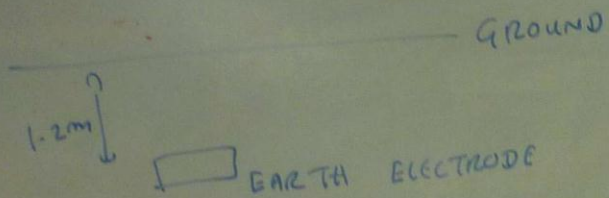
a.kyawmaing@afensu.edu.au



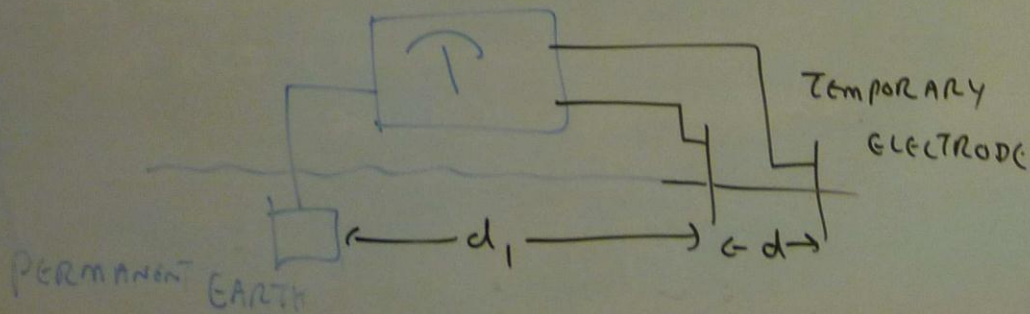
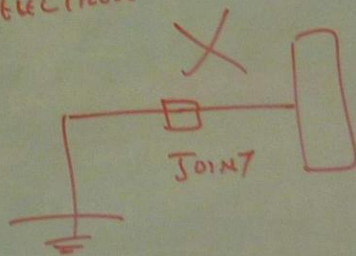
# EARTHING ARRANGEMENT







EARTH RESISTANCE MUST BE VERY SMALL TO ALLOW THE EARTH LEAKAGE CURRENT TO FLOW



## EARTH WIRE SIZE

CURRENT CARRYING CAPACITY OF  
NEUTRAL CONDUCTOR TABLE S.1

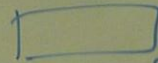
EARTH ELECTRODE SIZE  
TABLE S.2

GROUND

250

## EARTH WIRE

GREEN, GREEN/YELLOW



EARTH ELECTRODE

## TUTORIAL

FIND THE CLAUSES FOR THE FOLLOWINGS IN AS 3000:2007

- ELCB
- MEN
- MAIN SWITCH
- CONSUMER NEUTRAL LINK
- SUPPLY NEUTRAL LINK

## EARTHING

EARTH LEAKAGE VOLTAGE

EARTH ELECTRODE

EARTH LEAKAGE CURRENT

RESISTANCE OF EARTH ELECTRODE

SIZE OF EARTH WIRE

SIZE OF EARTH ELECTRODE