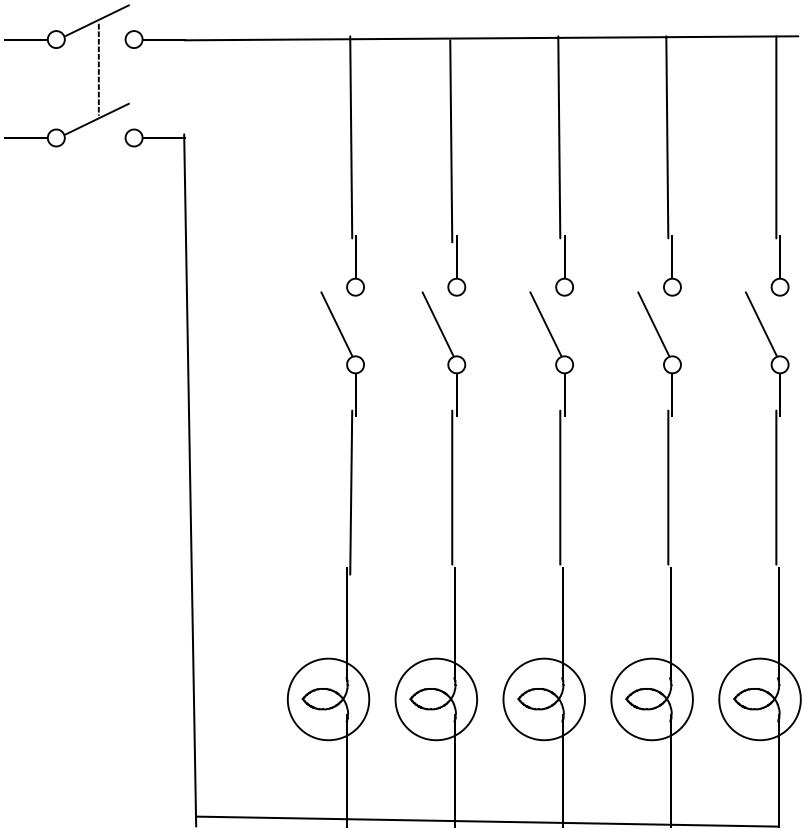
Stage 1 Electrical workshop practicals for advanced diploma courses

UEENEEE008B	Lay wiring/cabling and terminate accessories for extra-low voltage circuits

Practical Group (A) Approach to home wiring circuits

Practical (1)Approach to wiring circuits

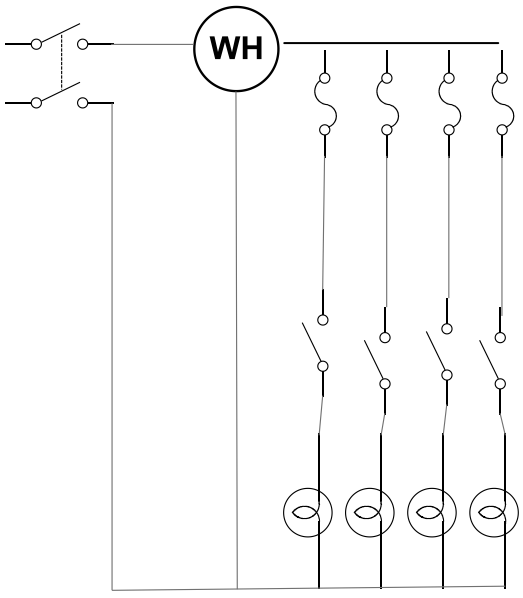
Make the connection for the following circuits by using the given equipments.



Equipments to use (All equipments for this practical will be provided)T

Practical (2)Approach to wiring circuits with energy supply meter connection

Make the connection for the following circuits by using the given equipments. (Above equipments PLUS additional Power/Energy meter)



Practical (3) Electrical Safety Testing

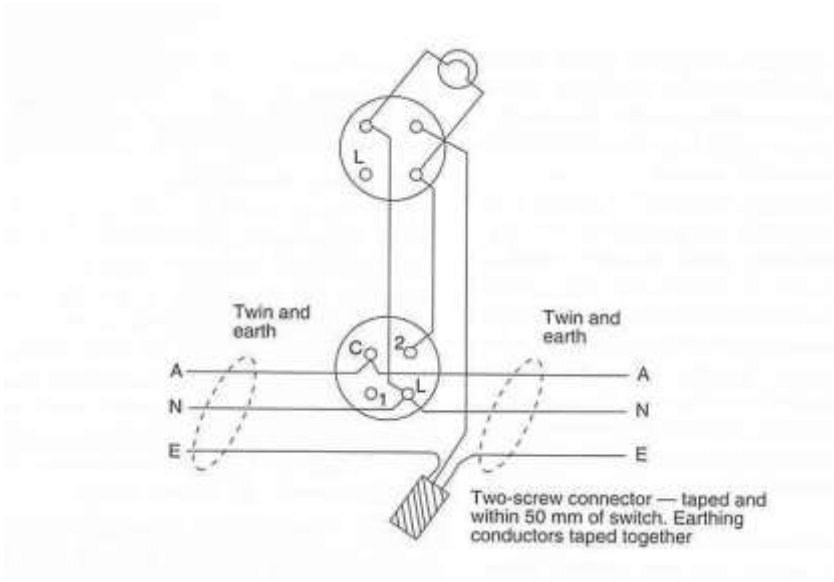
Approach to electrical safety testing & insulation resistance test by using megger

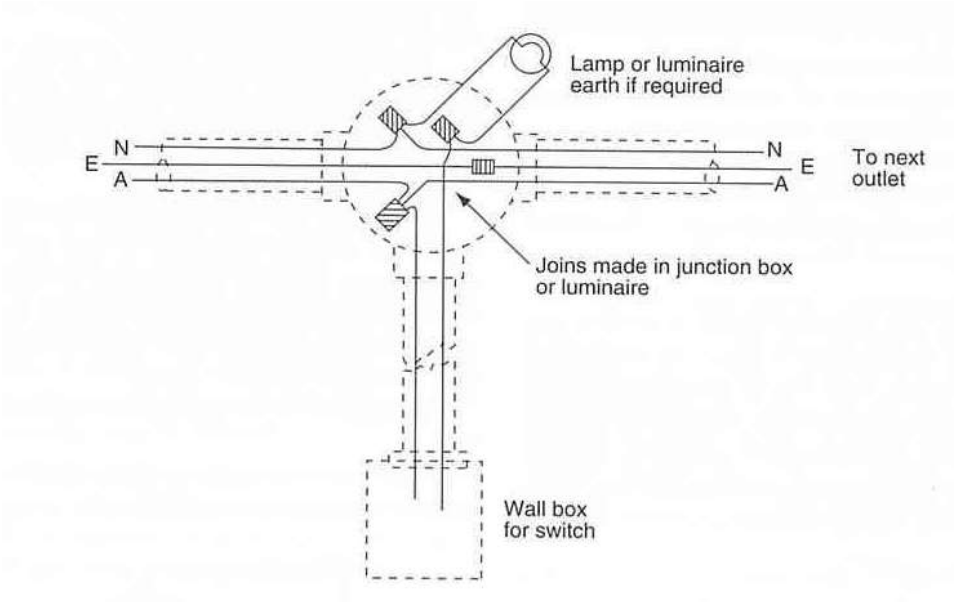
Use the following megger & test the insulation resistance of the electrical machines, supply, cables as directed by teacher

Practical Group (B) Home Wiring Circuits

Practical (4) Open wiring circuit 1 on timber board

You have to do the following wiring. Wiring to be done as open wiring without conduit





The teacher will provide the following timber board to fix the wiring circuits.

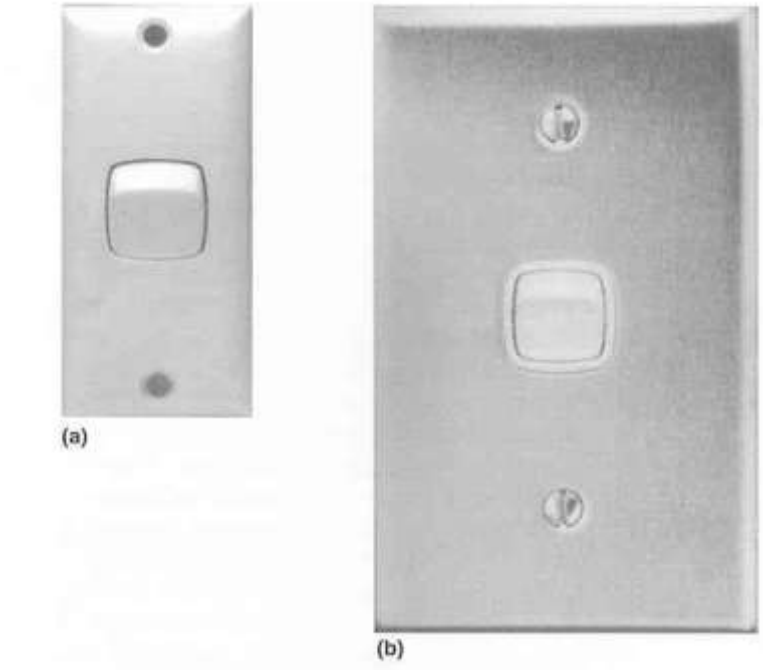
You need to purchase & bring the following tools & devices. If you are able to purchase & bring the tools & wiring accessories, you will complete UEENEEE008 as well as achieve the competency in

UEENEEC002B	Source and purchase material/parts for installation or service jobs

for 17908 students.


Lamp holder

240v Gang switch



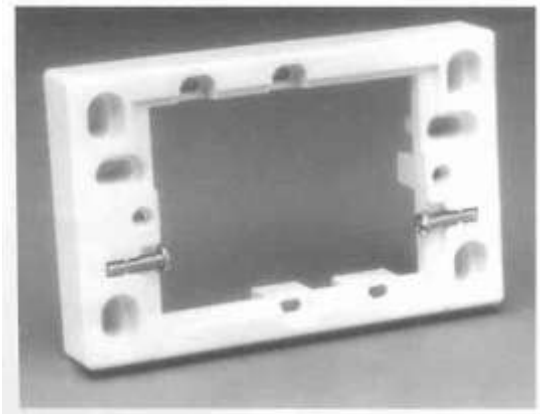


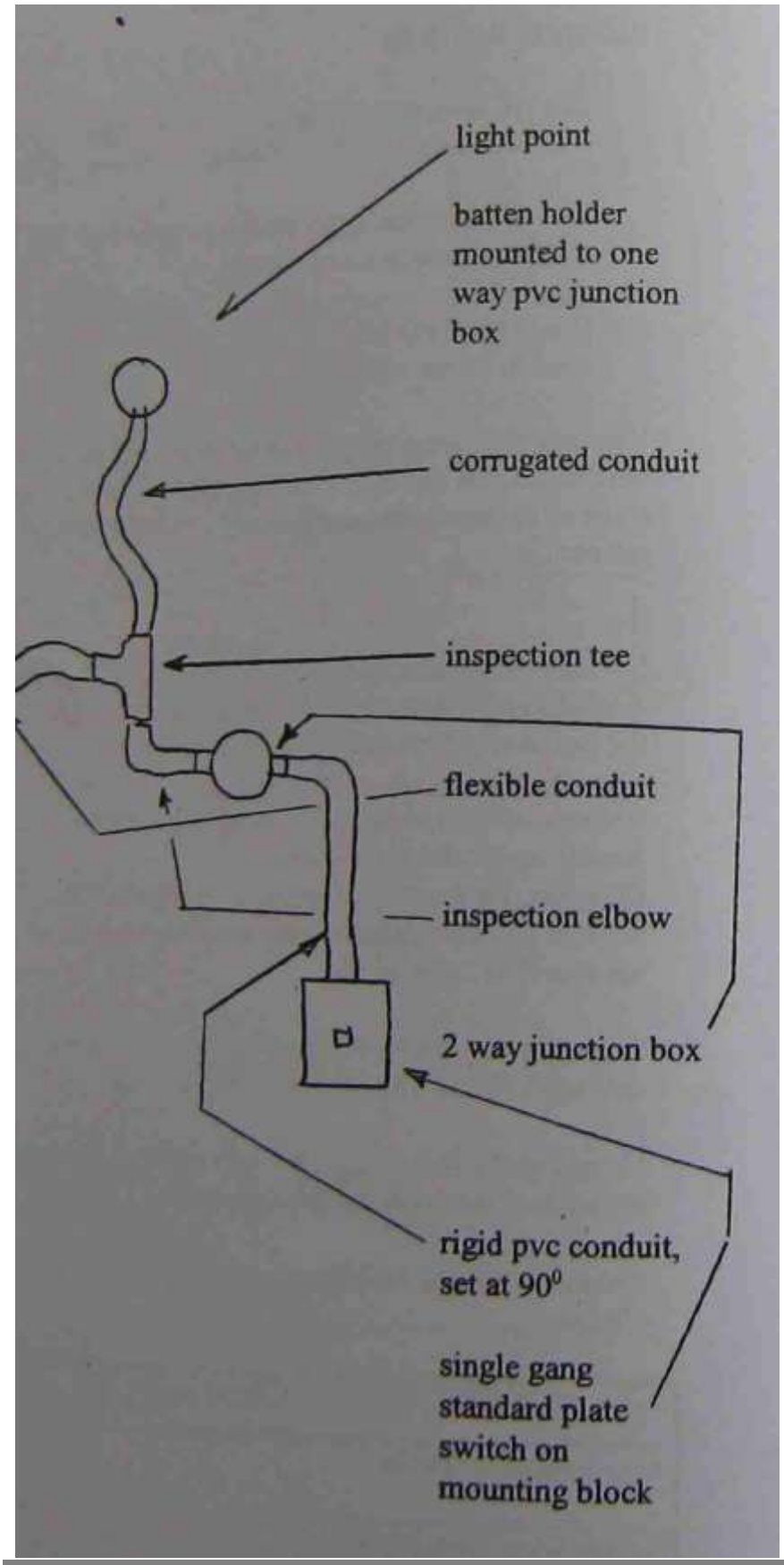
Fig. 5.13 Single-gang plastic mounting block, available in depths of 13 mm, 18 mm and 37 mm HPM INDUSTRIES

Fig. 5.2(c) Some self-tapping screws SPINAWAY CABLES

	List of hand tools	Cost	Source
1	TOOL KIT WITH CASE 29 PIECE WITH TORCH	$23.70	(Jay Car Electronics) TD2066
2	Wire stripper	$ 13.35	Jay Car Electronics TH 1824
3	1000V , 7 pieces screw driver set	$19.70	Jay Car Electronics TD 2022
4	7 piece Hex Nut Driver set	$19.95	Jay Car Electronics TD 2339
5	Three cores main flex cable		Jay Car Electronics WB 1562

Practical (5) Conduit wiring circuit on timber board

You have to do the following wiring. Wiring to be done as enclosed wiring in conduit



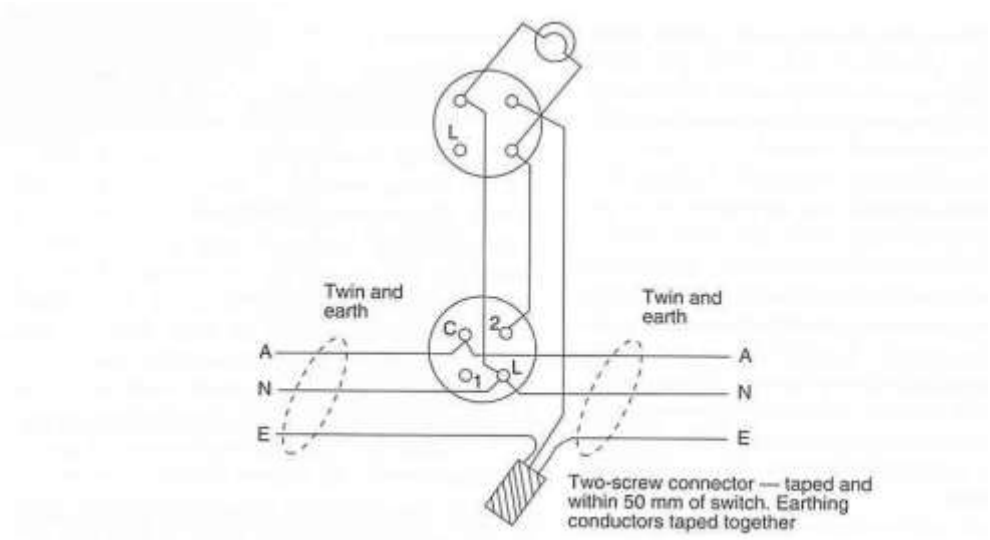
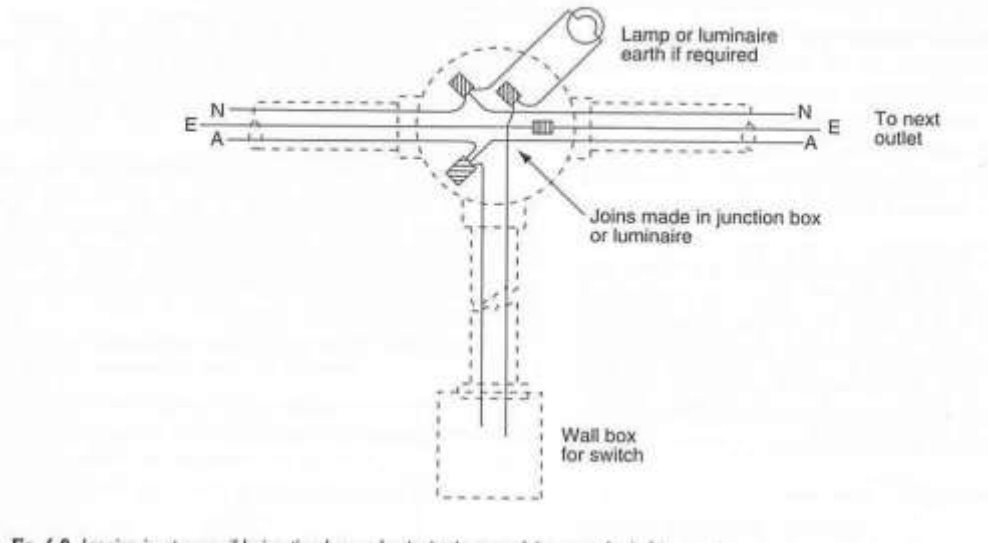


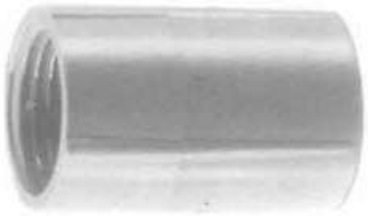
Fig. 6.8 *Looping at switch using twin and earth cable*



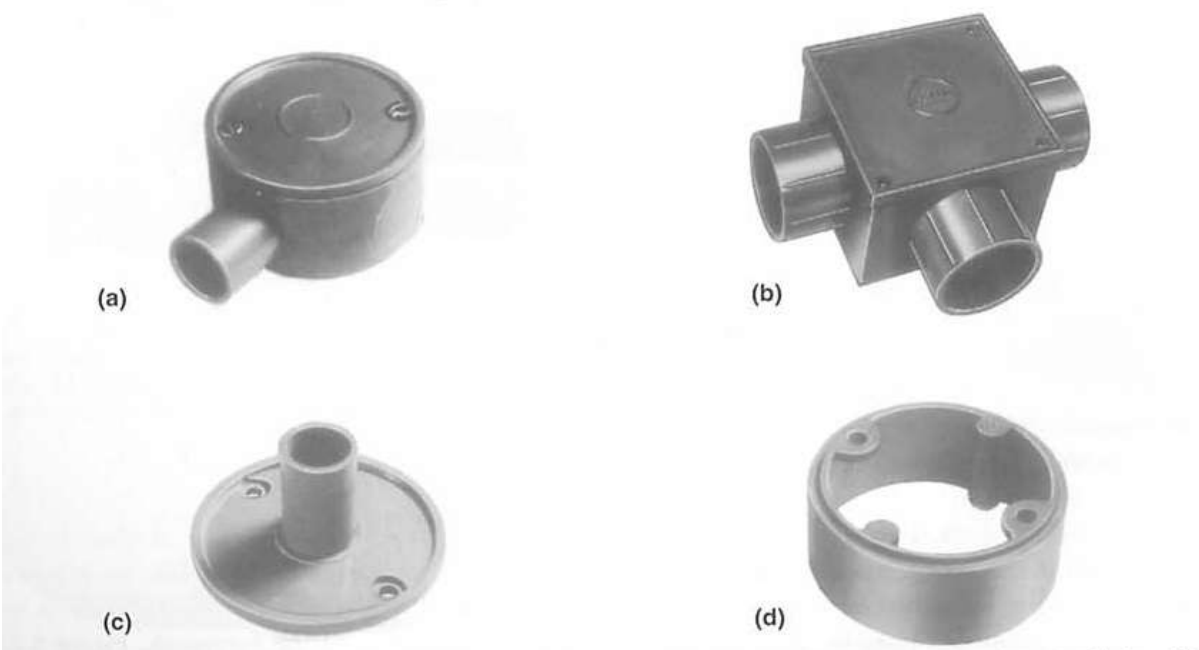
Equipments

In addition to above tools & equipments, you need to purchase & bring the following additional equipments & wiring accessories.

Fig. 5.20 *PVC inspection-type elbow and tee* GERARD INDUSTRIES



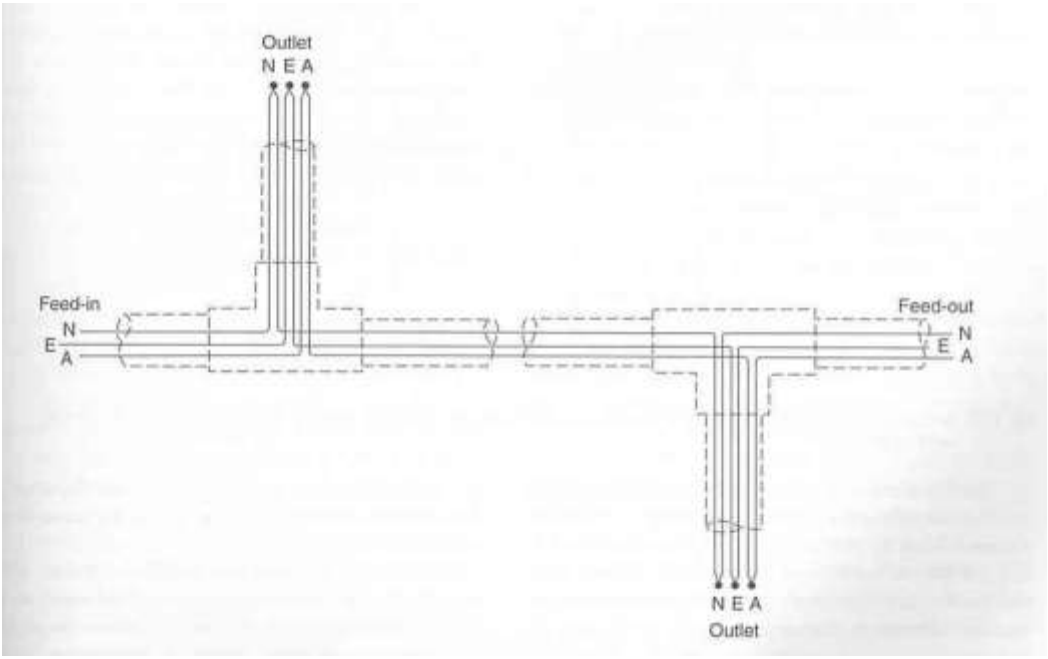
PVC Conduit

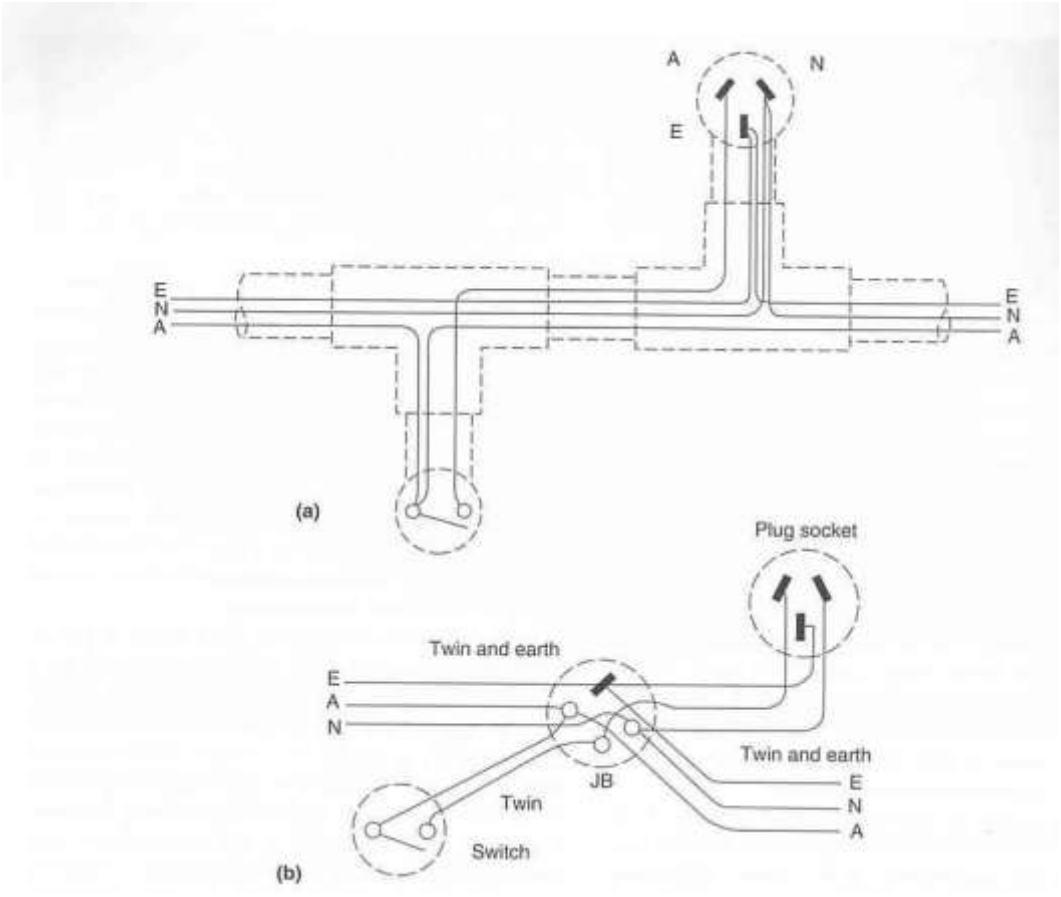


5.23 **(a)** *One-way round PVC junction box;* **(b)** *Three-way square PVC junction box;* **(c)** *Round PVC junction-box take-off plate;* **(d)** *junction-box extension ring* GERARD INDUSTRIES

Practical (6) Wiring circuit for socket outlet on timber board

Do the following circuits on timber board





Equipments

In addition to above tools & equipments, you need to purchase & bring the following additional equipments & wiring accessories.

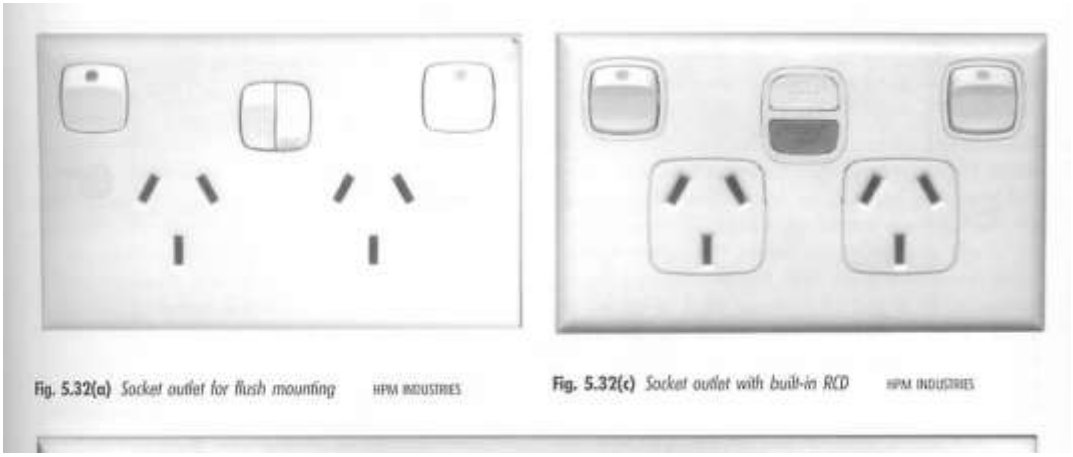


Fig. 5.32(a) *Socket outlet for flush mounting* HPM INDUSTRIES

Fig. 5.32(c) *Socket outlet with built-in RCD* HPM INDUSTRIES

Test your circuit

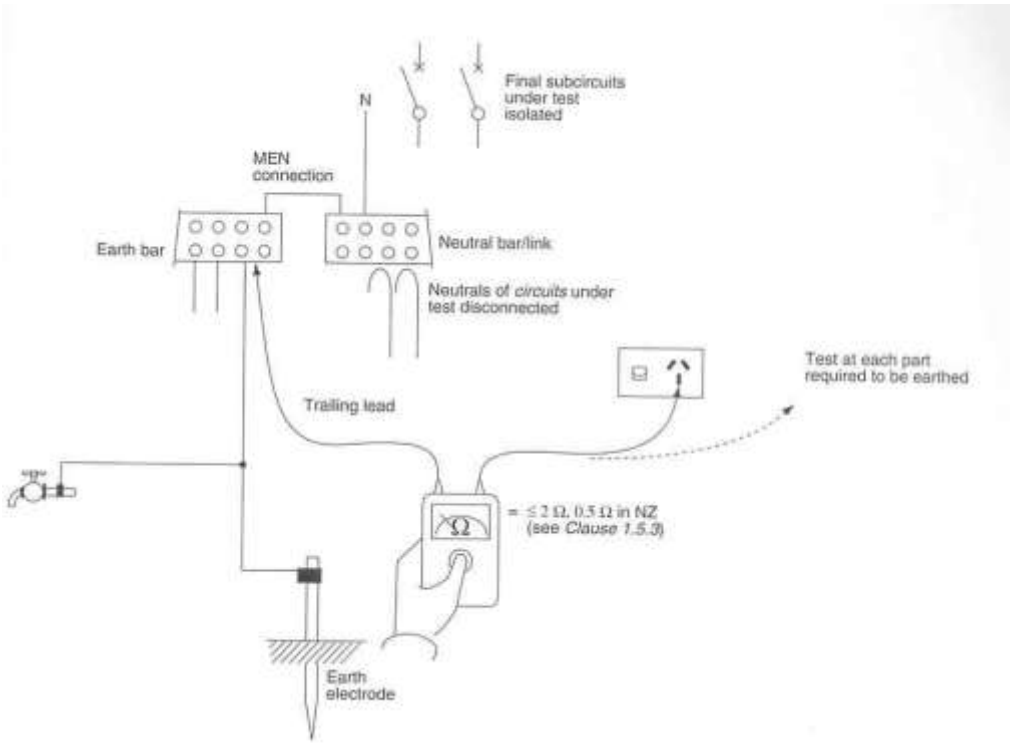


Fig. 11.21(b) *Resistance tests of other earthing and equipotential bonding conductors*

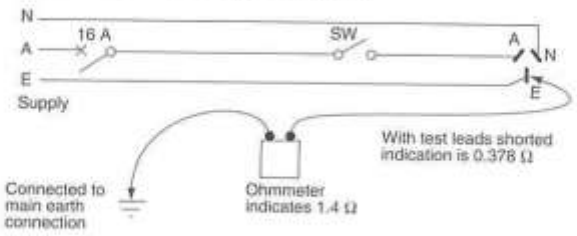


Fig. 11.21(c) *Resistance of the earthing system must be low enough to permit sufficient current to operate the fuse or circuit breaker*

For an electrical contracting work for home electrical wiring for lighting & socket outlet power, the followings are minimum required electrical wiring accessories. The students do not need to buy them to complete the stage 1 electrical workshop. It is just for your information

Equipments	**Unit price**	**Catalogue/** **Supplier**
http://www.sparkydirect.com.au/c/236039/1/conduit-accessories.html		
PVC Inspection Tee 20mm	$1.59	Sparkydirect
PVC Inspection Tee 25mm	$2.06	Sparkydirect
2Way 20mm Junction Box	$1.30	Sparkydirect
3 Way 20mm Junction Box	$1.45	Sparkydirect
4 Way 20mm Junction Box	$1.45	Sparkydirect
1 Way 20mm Junction Box	$1.60	Sparkydirect
20mm Solid Elbow	$1.00	Sparkydirect
25mm Solid Elbow	$1.10	Sparkydirect
Coupling plain pvc 20mm grey	$0.53	Sparkydirect
Coupling plain pvc 25mm grey	$0.64	Sparkydirect
MAINS WALL-MOUNT LIGHT SWITCHES	**$4.45**	(Jay Car Electronics) PS4055
CIV Insulation tester/ multimeter	$ 174,95	(Jay Car Electronics) DM 1493
TOOL KIT WITH CASE 29 PIECE WITH TORCH	**$23.70**	(Jay Car Electronics) TD2066
WIRE STRIPPER, CUTTER PLIERS	**$11.70**	(Jay Car Electronics)

		TH1825
SINGLE 240V GPO	**$4.45**	(Jay Car Electronics) PS4040
MAINS WALL SWITCH DOUBLE	**$5.25**	(Jay Car Electronics) PS4057
Back,box,Gridswitch,aluminium,surface flush mount,1/2 module	$4.91	(RS Electronics) 200-0664
Box,mount,Grid Plus,3-4 way,aluminium	$5.57	(RS Electronics) 341-4086
MCB,B,std,16A,Starbreaker	$12.20	(RS Electronics) 569-552
Conduit,flexible,Nylon,Adaptalok,20mmx10m	$84.00	(RS Electronics) 599-881
Conduit,flexible,polypropolene,25mmx10m	$54.50	(RS Electronics) 260-8606
Lampholder,batten,angled,white moulded,lamp activated,250V	**$7.05**	(RS Electronics) 184-0001
Woodscrew kit,countersunk,cross recess,single thread,steel,zinc plated,yellow passivated	$117.00	(RS Electronics) 493-4632
Metal Saddle	$7.00	Clipsal 170HDGM
Three cores main flex cable	$90.00	Jay Car Electronics WB 1562
180 mm combination plier	$15.70	Jay Car Electronics TH1984
160mm side cutter	$14.35	Jay Car Electronics TH1985
Screw removing plier	$23.70	Jay Car Electronics TH 2330
1000V , 7 pieces screw driver set	$19.70	Jay Car Electronics TD 2022

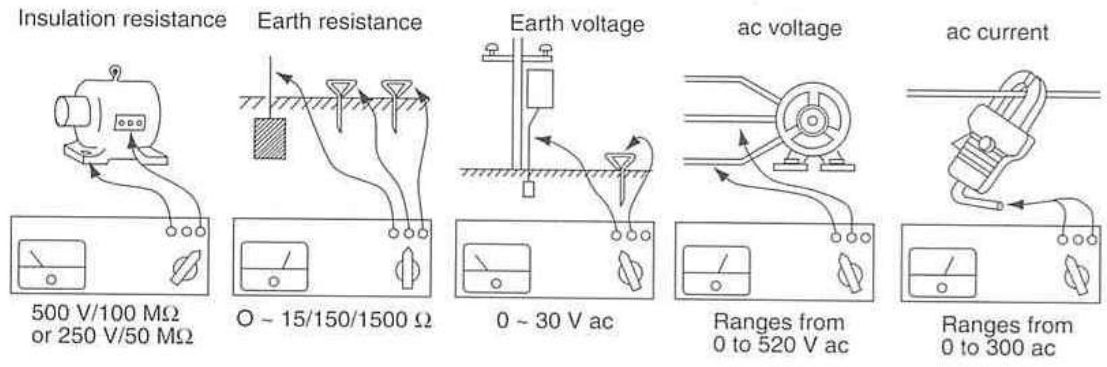
Mini bench vice	$13.35	Jay Car Electronics TH 1764
Stainless steel 6.5 inch cable shear	$ 15.70	Jay Car Electronics TH 1898
10 pieces spanner set	$ 14.35	Jay Car Electronics TH 1910
Wire stripper	$ 13.35	Jay Car Electronics TH 1824
Modular crimping tool	$31.90	Jay Car Electronics TH 1936
T type Tap Wrench	$ 10.35	Jay Car Electronics TD 2445
PC Drill Bits pack 10 pieces	$ 14.70	Jay Car Electronics TD 2400
7 piece Hex Nut Driver set	$19.95	Jay Car Electronics TD 2339
Hack saw (Wire cutter)	$30	

UEENEEE033B		Document occupational hazards and risks in electrical work

Practical Group (C) Home Wiring Circuits Testing (Study electrical safe working)

Practical (7) Voltage , Current, Insulation Resistance testing

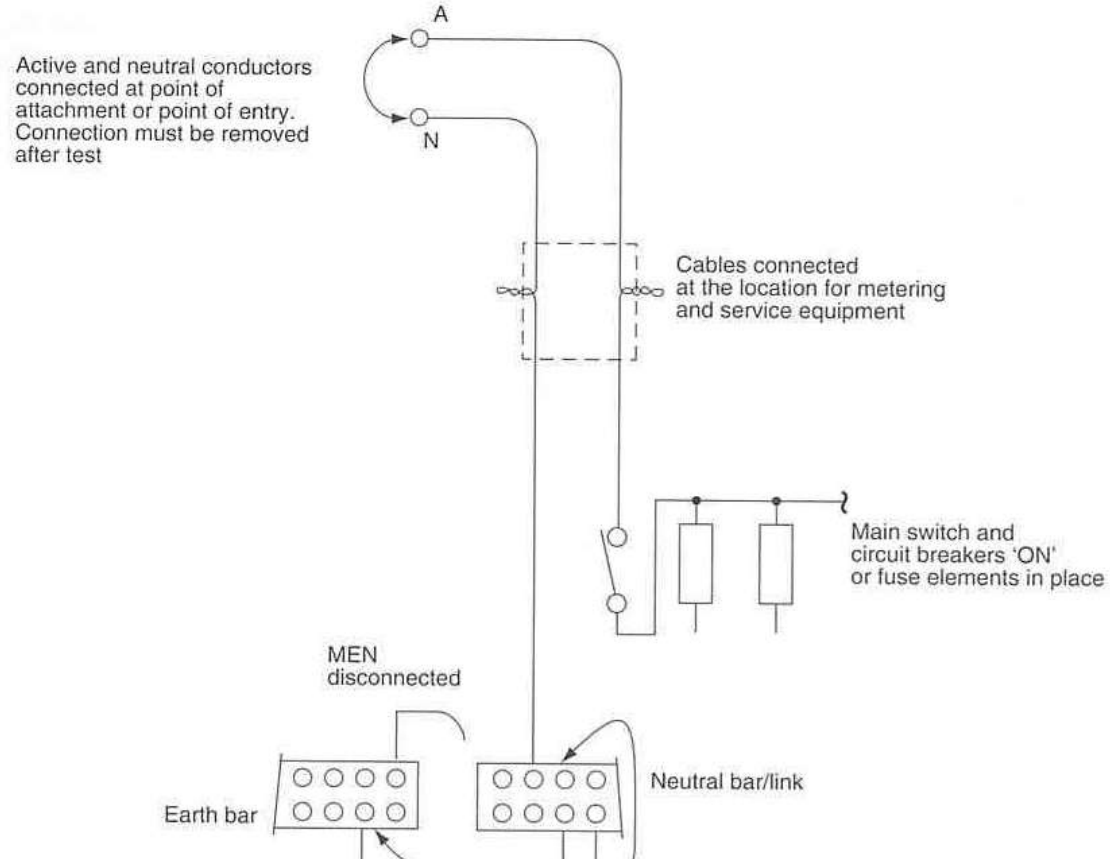
Perform Voltage , Current, Insulation Resistance testing as directed by teacher



1 *Multifunctional field tester applications* NILSEN INSTRUMENTS

Practical (8) Insulation Resistance testing of Earth/ Neutral Link

Connect the given circuit by using the provided equipments.




CROSS-OVER BOARD

Test the insulation resistance as per following testing diagrams

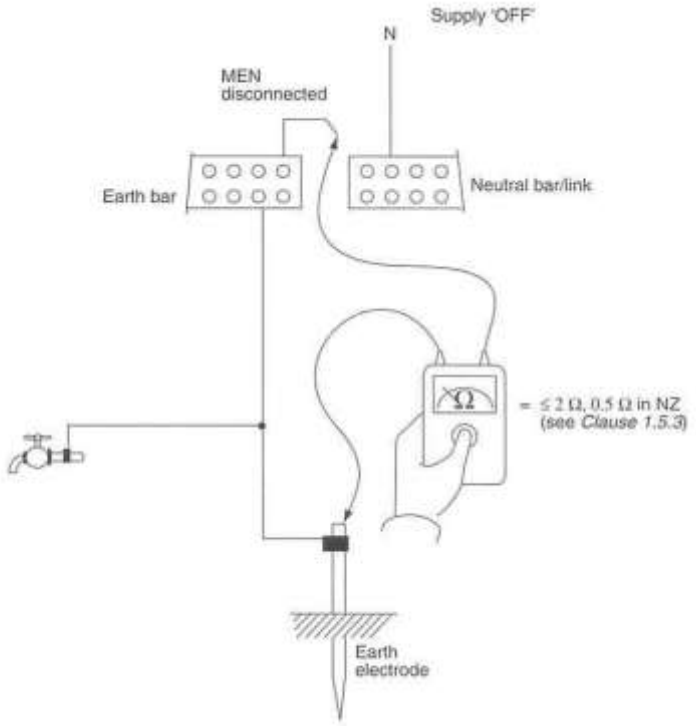
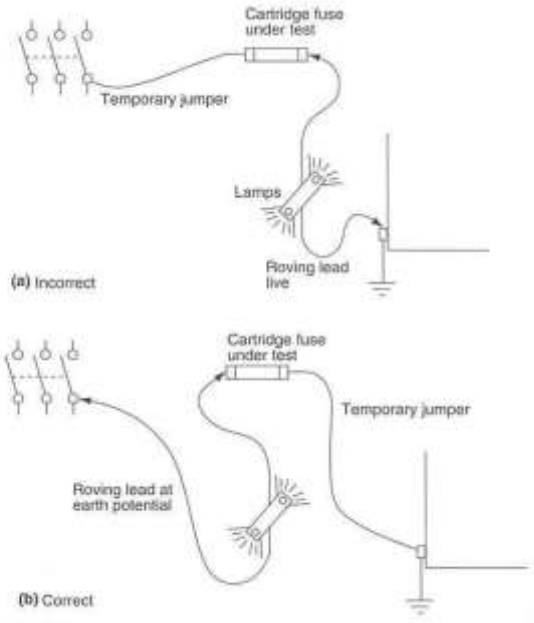
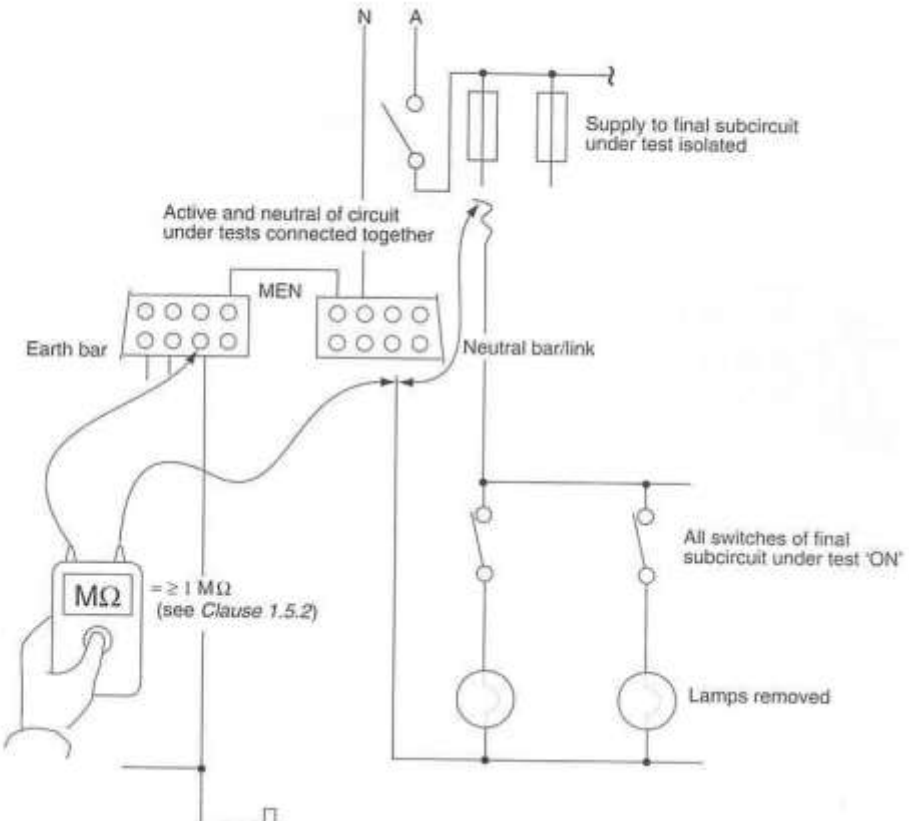


Fig. 11.15 *This battery-operated insulation-resistance tester is light and compact* MEGGER INSTRUMENTS





Practical (9) Advanced Installation Testing on switch board & appliances

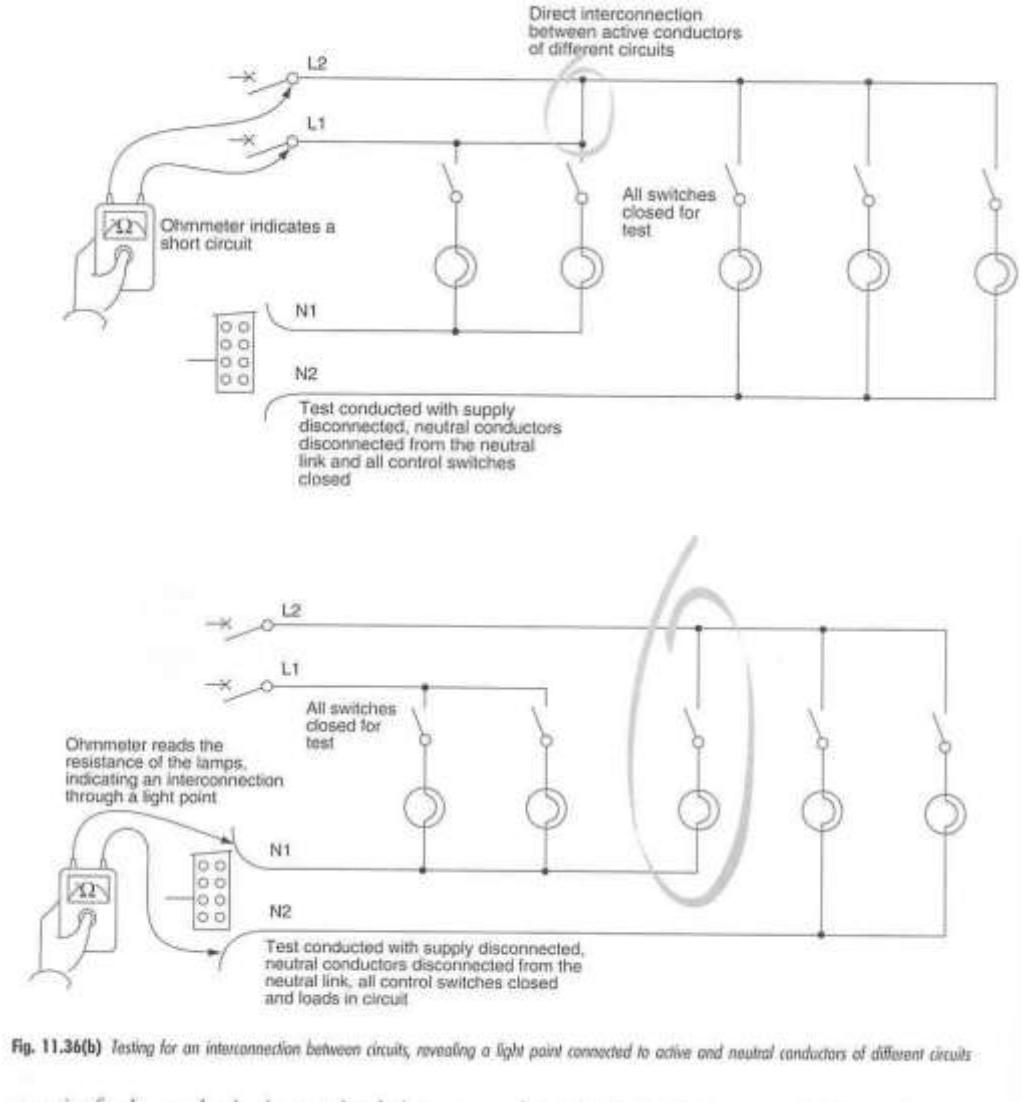
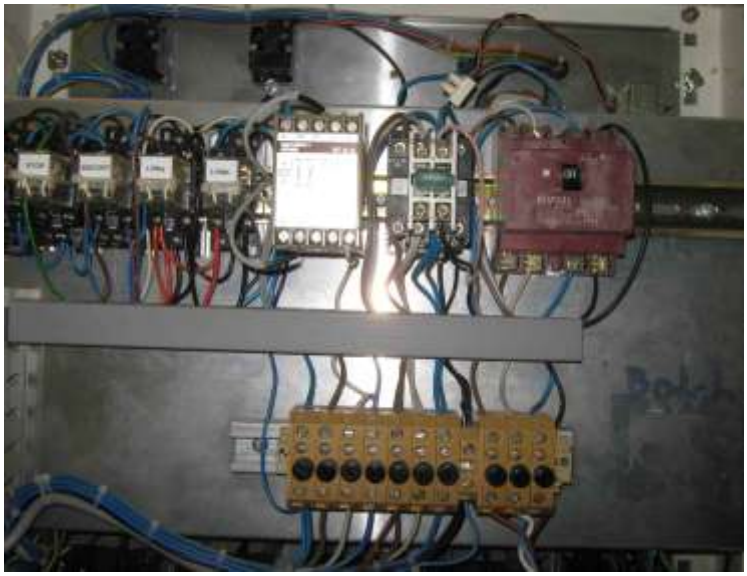


Fig. 11.36(b) *Testing for an interconnection between circuits, revealing a light point connected to active and neutral conductors of different circuits*

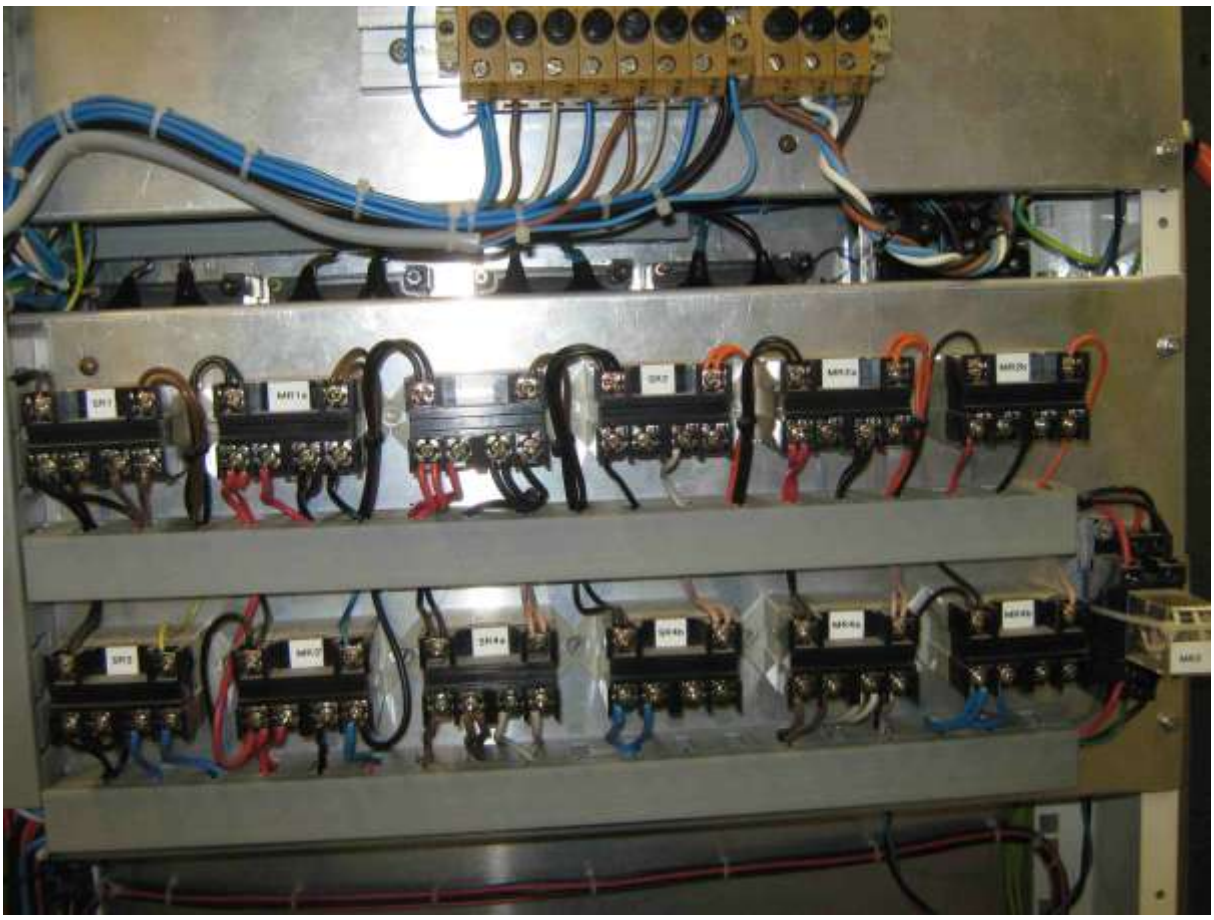


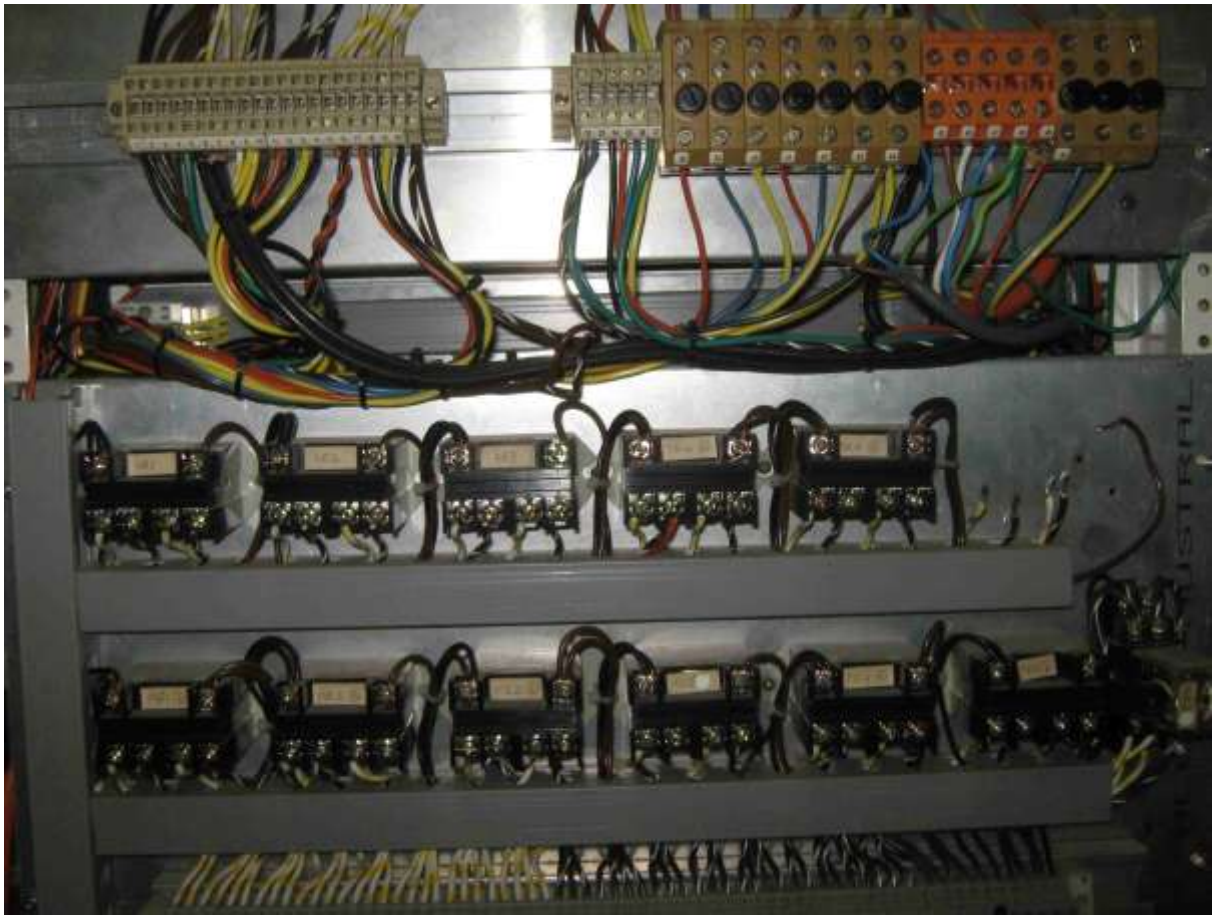
UEENEEE002B	Dismantle, assemble and fabricate electrotechnology components
UEENEEE005B	Fix and secure equipment

Practical Group (D) Disassembling & re-assembling the electrical equipments

Practical (10) Disassembling & re-assembling the electrical equipments for movable switch board

- Note the original connection of movable switch board
- Remove the connection
- Take out the equipments
- Reinstall and reconnect the wire
- Do the safety test





Practical (11) Disassembling & re-assembling the 3 phase power socket

- Note the original connection
- Remove the connection
- Take out the equipments
- Reinstall and reconnect the wire
- Do the safety test

Practical (12) Disassembling & re-assembling the power supply to AC/DC motor

- Note the original connection
- Remove the connection
- Take out the equipments
- Reinstall and reconnect the wire
- Do the safety test

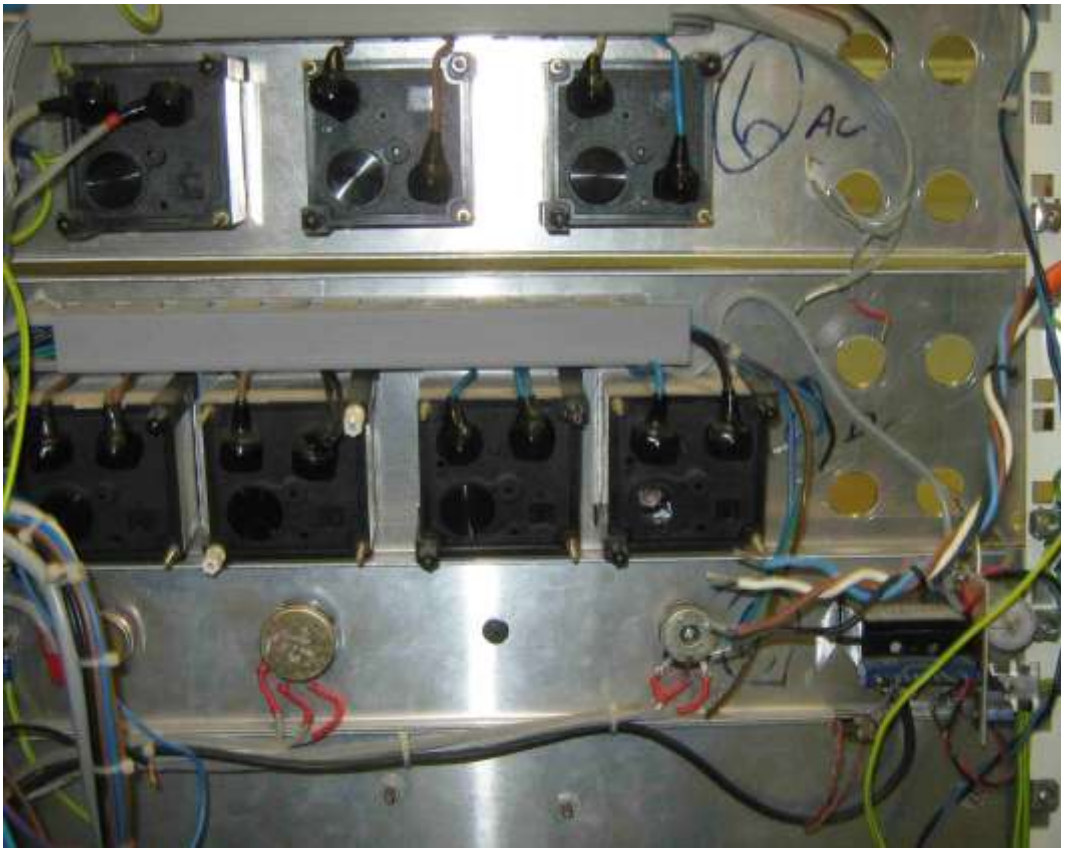
Practical Group (E) Disassembling & re-assembling the measuring electrical equipments

(Bring your own tools such as screw drivers (star/ flat, plier etc)

Practical (13) Disassembling & re-assembling the measuring devices

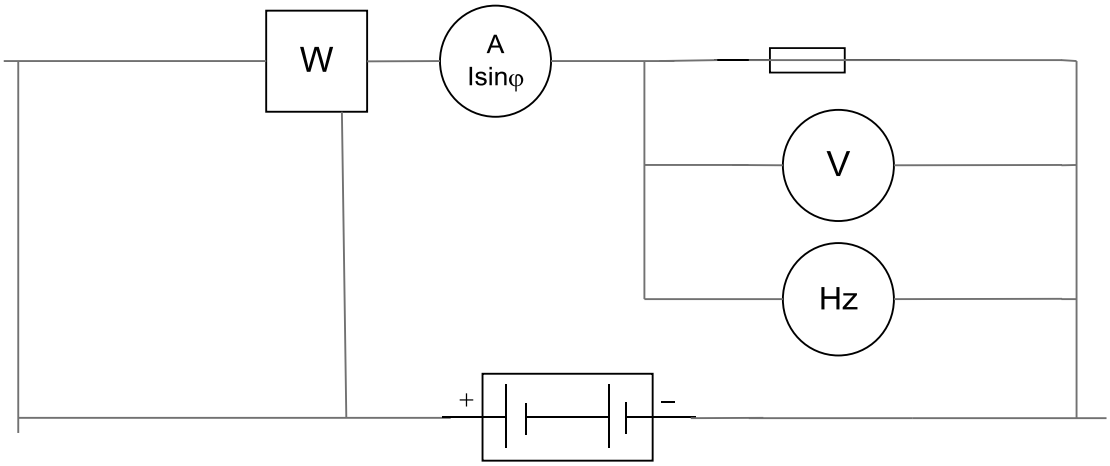
- Note the original connection
- Remove the connection
- Take out the equipments
- Reinstall and reconnect the wire
- Do the safety test


SQUIRREL CAGE INDUCTION MOTOR
V
400
200
STATOR VOLTAGE
A
2
STATOR CURRENT
Hz
50
100
D.C. DRIVE
PERMANENT MAGNET D.C. MOTOR
WOUND FIELD D.C. MOTOR
V
100
200
ARMATURE VOLTAGE
A
1
ARMATURE CURRENT
V
100
200
ARMATURE VOLTAGE
A
5


AC

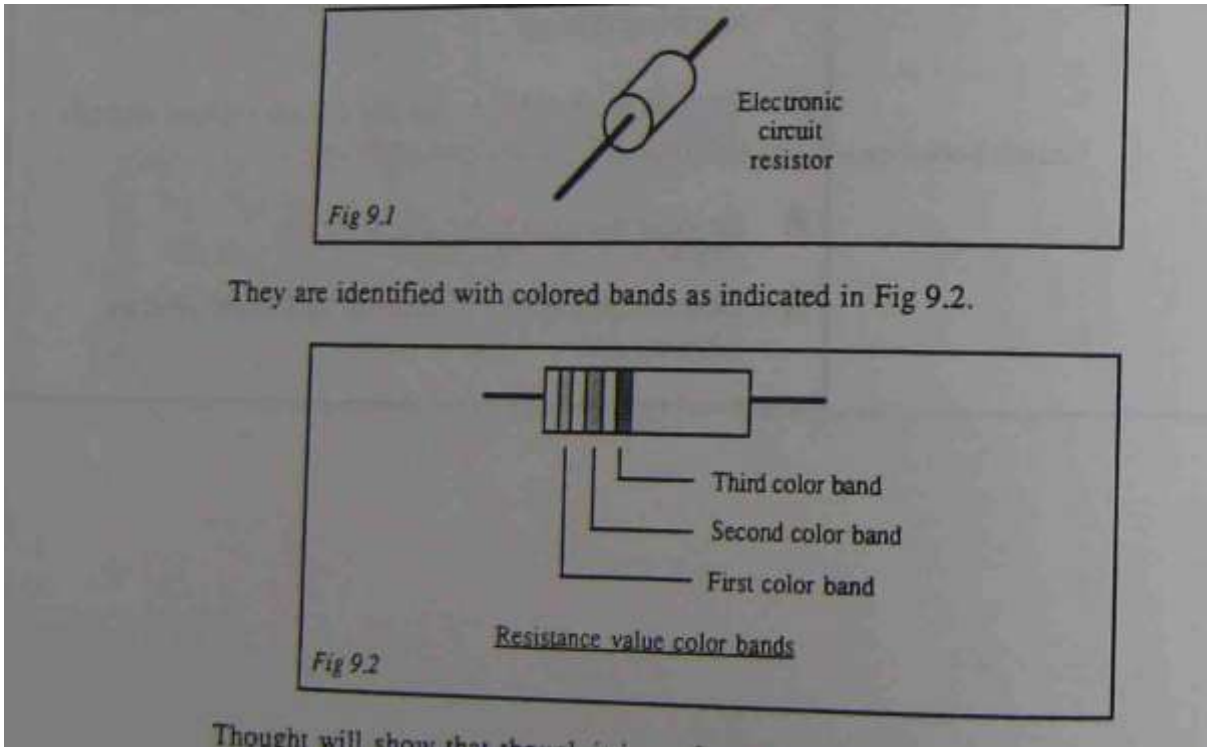
Practical (14) Voltage,Current Power Measuring devices connection

Connect the given circuits for voltage, current and power measurement



Practical (15) Resistors

Determine the resistance



the resistive values is shown below.

Color	First Significant Figure	Second Significant Figure	Multiplier	
Black	0	0	1	(10^0)
Brown	1	1	10	(10^1)
Red	2	2	100	(10^2)
Orange	3	3	1,000	(10^3)
Yellow	4	4	10,000	(10^4)
Green	5	5	100,000	(10^5)
Blue	6	6	1,000,000	(10^6)
Violet	7	7	10,000,000	(10^7)
Grey	8	8	100,000,000	(10^8)
White	9	9	1,000,000,000	(10^9)

Tolerance values are indicated by the fourth color band (see fig 9.3) as follows.

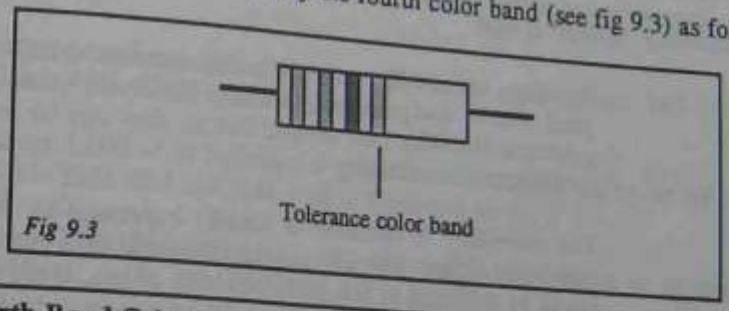


Fig 9.3

Fourth Band Color	Tolerance
Gold	+/- 5%
Silver	+/- 10%
No fourth band	+/- 20%

Thus, for example, a resistor with a

are indicated by the fourth color band (see fig 9.3) as follows.

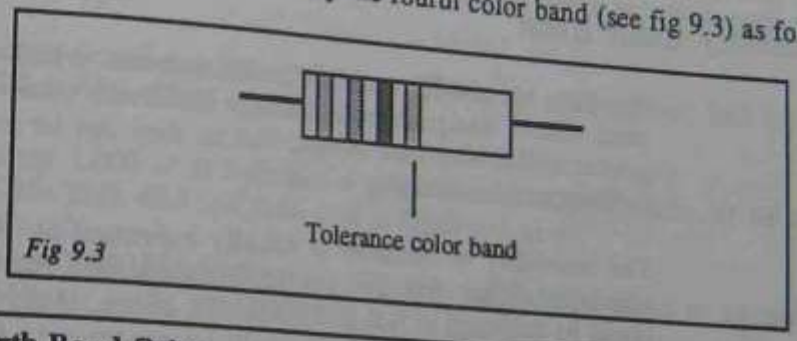


Fig 9.3

Fourth Band Color	Tolerance
Gold	+/- 5%
Silver	+/- 10%
No fourth band	+/- 20%

Thus, for example, a resistor with a

Exercise 9.8

Give the values, tolerances and reliabilities of resistors having the following color bands:-

(1) Orange, orange, green, silver, red. **3.3MΩ, +/-10%, 0.01%.**
(2) Green, blue, black, gold, brown. **56Ω, +/-5%, 0.1%.**
(3) Grey, red, orange, gold, orange. **82kΩ, +/-5%, 0.001%**

The Digital Code

This code is easier to use than the color band system, because there is less to remember. However, it is difficult to print numbers and letters onto very small components, so the system is usually applied to larger resistors such as the wire-wound type.

R is used to denote the decimal point, so 1R0 is for a 1Ω resistor, 3R9 indicates 3.9Ω, 68R is 68Ω, 220R is 220Ω and so on.

K indicates 1,000 so it indicates a value in thousands of ohms, or **kilohms.** Thus 1K0 is 1kΩ, 4K7 is 4.7kΩ, 82K is 82kΩ and so on.

M denotes 1,000,000 and gives values in millions of ohms or **megohms.** Thus, 1M5 is 1.5MΩ, 22M is 22MΩ and so on.

This system identifies tolerance in terms of a second letter placed after the rest of the code. The tolerance code is:-

B means +/- 0.1%
C means +/- 0.25%
D means +/- 0.5%
F means +/- 1%
G means +/- 2%
J means +/- 5%
K means +/- 10%
M means +/- 20%
N means +/- 30%

Examples of the use of the code are:-

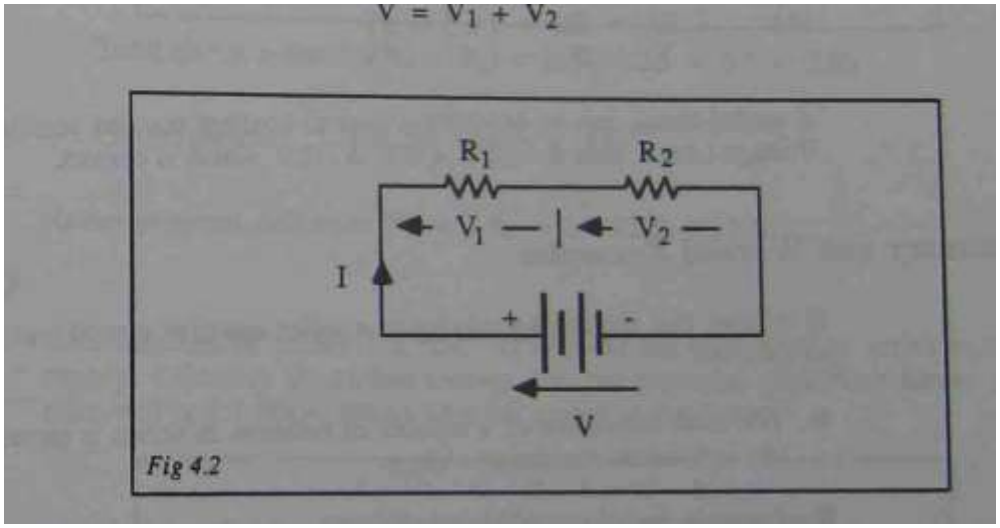
4R7J is 4.7Ω +/- 5%
6K8F is 6.8kΩ +/-1%
39KK is 39kΩ +/- 10%
4M7M is 4.7MΩ +/- 20%

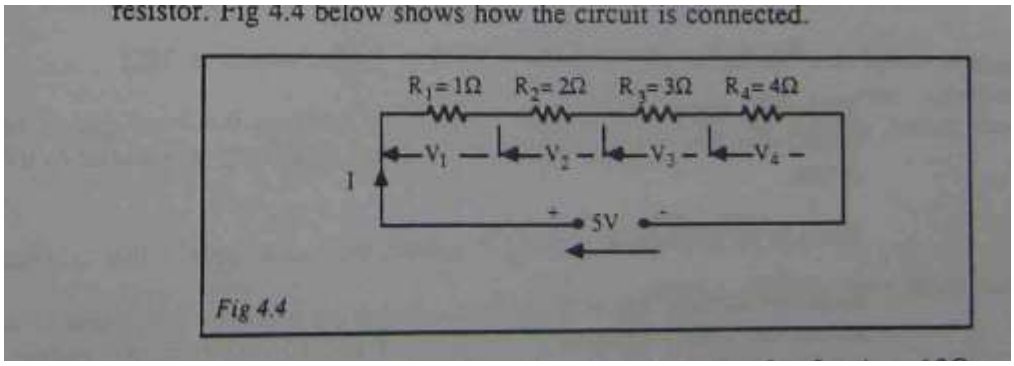
UEENEEE003B	Solve problems in extra-low voltage single path circuits
UEENEEE004B	Solve problems in multiple path d.c. circuits

Practical Group (F) DC Circuit Practicals (All equipments to be provided)

Practical (16) DC Series circuit

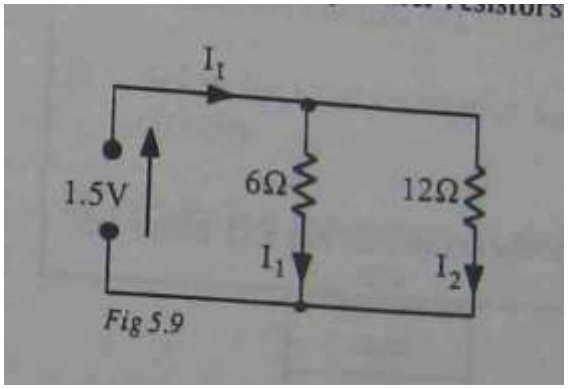
Measure the voltage & current in the branches of the given circuit





Practical (17) DC parallel circuit

Measure the voltage & current in the branches of the given circuit



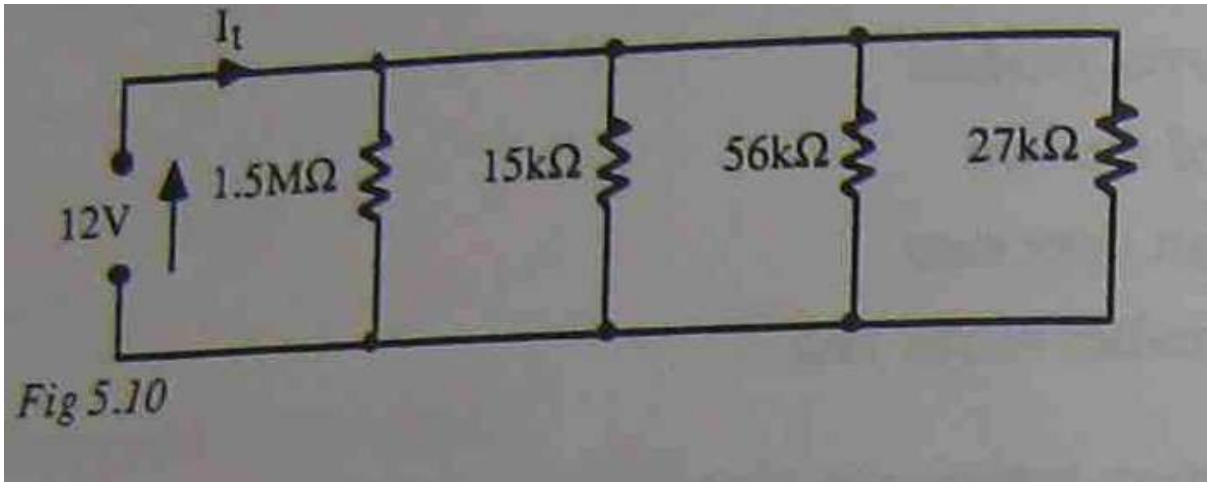
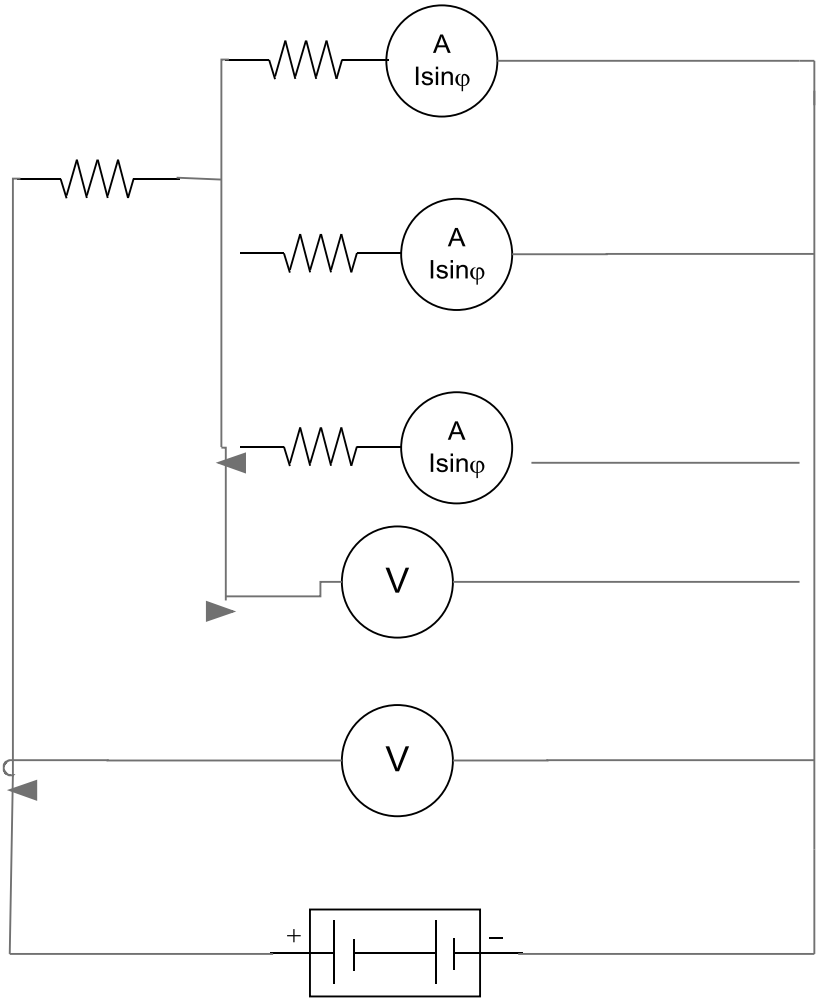


Fig 5.10

Practical (18) DC series parallel circuit

Measure the voltage & current in the branches of the given circuit

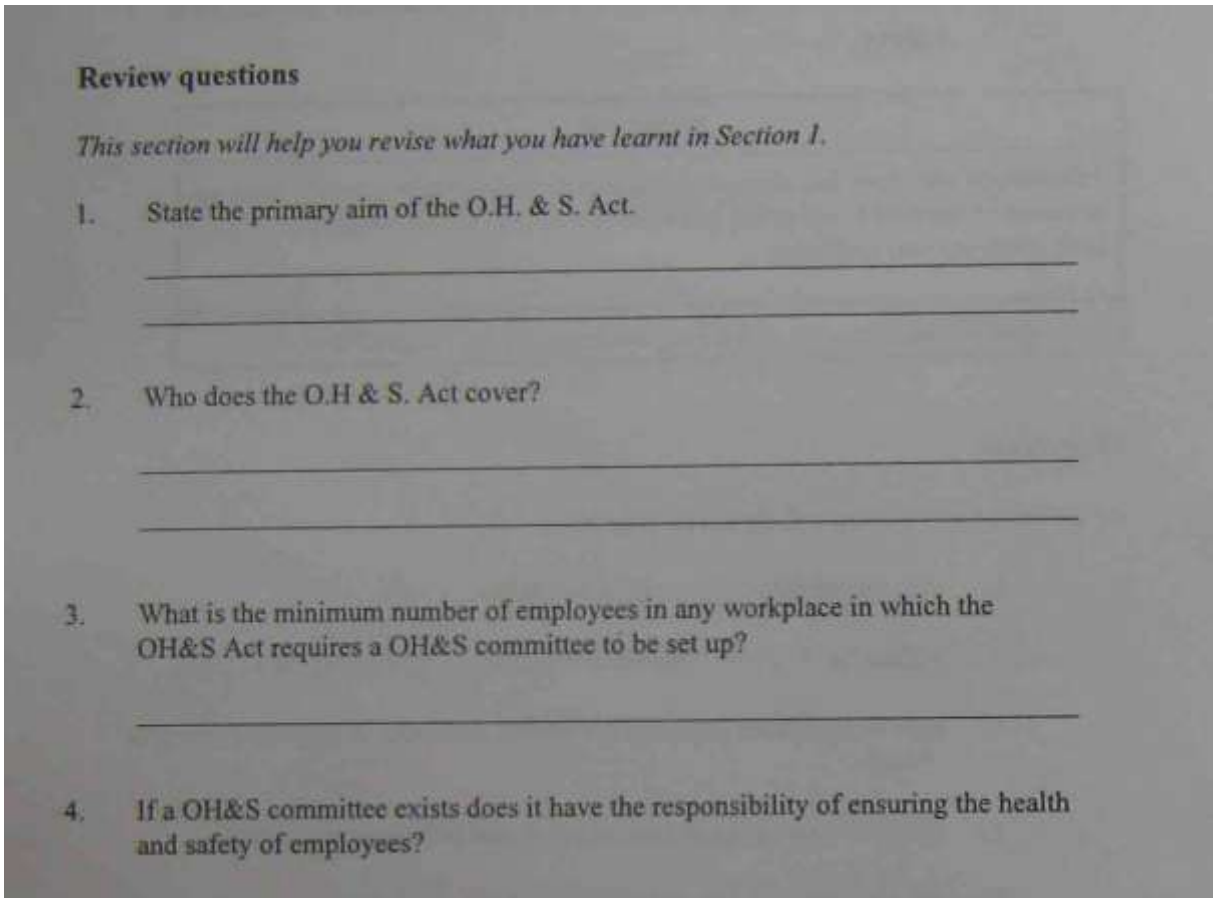


Stage 1 Electrical Workshop Schedule

Practical Classification	Practical Number	Week 1-3	Week 4-6	Week 7-9	Week 10-12	Week 13-15	Week 16-18
A	1.2,3	Group 1	Group 6	Group 5	Group 4	Group 3	Group 2
B	4,5,6	Group 2	Group 1	Group 6	Group 5	Group 4	Group 3
C	7,8,9	Group 3	Group 2	Group 1	Group 6	Group 5	Group 4
D	10,11,12	Group 4	Group 3	Group 2	Group 1	Group 6	Group 5
E	13,14,15	Group 5	Group 4	Group 3	Group 2	Group 1	Group 6
F	16,17,18	Group 6	Group 5	Group 4	Group 3	Group 2	Group 1

UEENEEE001B		Apply OHS practices in the work place

Study the class lessons + Online notes OHS Workbook and do the following exercises. The test question will be based on them



Review questions

This section will help you revise what you have learnt in Section 1.

1. State the primary aim of the O.H. & S. Act.

2. Who does the O.H & S. Act cover?

3. What is the minimum number of employees in any workplace in which the OH&S Act requires a OH&S committee to be set up?

4. If a OH&S committee exists does it have the responsibility of ensuring the health and safety of employees?

5. Who has the responsibility of ensuring the health and safety of employees?

_____

6. What is an OH&S Committee?

7. What can OH&S Committees do?

_____

_____

_____

_____

8. What can committee members do?

_____

9. In one State alone there are over 50 deaths, 35,000 injuries and 5,000 illnesses costing billions of dollars annually. How do these costs affect the:

a) Employee _____

b) Employer _____

c) Community _____

10. Can employees be dismissed for making a safety complaint?

_____

11. What are the responsibilities of employees with respect to OH&S in the workplace?

12. State the responsibility of employers with regard to persons **not** employed by their organisation., e.g. members of the public visiting the site.

_____

_____

13. What are the responsibilities of employers with respect to OH&S in the workplace?

Review questions

This section will help you revise what you have learnt in Section 2.

1. What is *housekeeping*? List some hazards that can occur as a result of poor housekeeping.

_____

_____

2. List some emergencies that pose a threat to health and safety.

_____

_____

3. It is essential that the employer provides personal protective equipment for the employee, for example respiratory protection. List five other types of protective gear that is required by the worker.

- _____

4. What sort of extinguisher should be used on an oil based fire?

_____

_____

5. What sort of extinguisher should **not** be used on an oil based fire?

6. Describe the major steps to be taken in the case of a workplace fire

7. Before attempting a job requiring *manual lifting* there are a number of safety factors to consider. List **five** factors that would be considered essential.

- _____
- _____
- _____
- _____
- _____

8. A ladder rests against a wall at a height of 4m. How far from the wall should the base of the ladder be?

9. List **three** ways in which industrial chemicals can enter the body.

- _____
- _____
- _____

10. What is a MSDS and what is it for?

_____

_____

11. What information should a label on a dangerous substance contain?

_____

Review questions

This section will help you revise what you have learnt in Section 3.

1. What is meant by heat stress?

_____

_____

2. What are the effects of excess heat on the human body?

_____

3. What are the *"prevention and control"* measure for excess cold?

_____

_____

4. List effects of vibration exposure on the worker.

_____

5. Excessive vibration can be controlled and prevented. List **five** ways in which this can be achieved.

- _____
- _____
- _____
- _____
- _____

6. What is noise?

_____

_____

7. What are the long term effects of exposure to noise?

_____

8. List general methods of noise reduction.

_____

_____

9. What are the psychological symptoms of stress?

_____

_____

10. What are some of the physiological symptoms of stress?

11. What are some of the effects of alcohol consumption on the human body?

_____

_____

12. What is the O.O.S. and what are some of its symptoms?

_____

This section will help you revise what you have learnt in Section 5.

1. List effects that electricity can have on the human body.

_____

_____

2. List **three** major hazards connected with electricity.

- _____
- _____
- _____

3. What care should be taken when using electric tools?

4. Electrical and electronic equipment can sometimes be fitted with "safety interlock" switches to doors and covers. State the reasons for this safety feature.

_____

_____

5. What is the special safety feature of Residual Current Devices (RCDs), sometimes referred to as a safety switch?

_____

_____

6. Can RCDs give the consumer complete electrical protection? Give reasons for your answer.

_____

7. If electrical equipment is "locked off" who should retain the keys until all the maintenance work is finished?

_____

_____

8. When should a worker place a "danger tag" on electrical equipment?

_____

_____

9. Double insulated portable tools provide additional safety protection from electric shock. All such tools are marked DOUBLE INSULATED DO NOT EARTH. Why should double insulated equipment never be earthed?

_____

Review questions

This section will help you revise what you have learnt in Section 6.

1. Describe the procedures you would use to remove a victim from what is believed to be a live electrical situation.

2. What procedures for rescue should occur if the voltage is known to be 1000 volts or above?

_____

Review questions

This section will help you revise what you have learnt in Section 7.

1. When an accident occurs and a person is injured, it is most important to ensure that: *(tick the correct box)*

- ☐ no further injury occurs to the victim
- ☐ the ambulance is called
- ☐ no injury occurs to rescuers
- ☐ no damage occurs to property.

2. The *ABC* of first aid represents: *(tick the correct box)*

- ☐ airway, breathing, conscious
- ☐ airway, breeding, conscious
- ☐ airway, breathing, circulation
- ☐ airway, bleeding, circulation.

3. The best place to feel for a victim's pulse is in the carotid artery which is located on the: *(tick the correct box)*

- ☐ side of the Adam's apple
- ☐ rear of the left ear
- ☐ inside of the thigh
- ☐ chest above the sternum.

4. The occupational health and safety (first aid) regulation states the requirements for the provision of first aid in the workplace, including: *(tick the correct box)*

- ☐ a first-aid facility
- ☐ first-aid equipment and personnel
- ☐ a register of injuries and treatment
- ☐ all of the above.

5. DRABC is an abbreviation of the priorities for a first-aid action plan. Complete the words below.

D _____

R _____

A _____

B _____

C _____

6. If you are alone and you have to give first aid, what should you do about telephoning for help? *(tick the correct box)*

- ☐ stabilise the victim and then phone
- ☐ quickly telephone and then give emergency care
- ☐ concentrate on emergency care and not take time to phone
- ☐ perform the ABCs of emergency care for one minute and then phone.

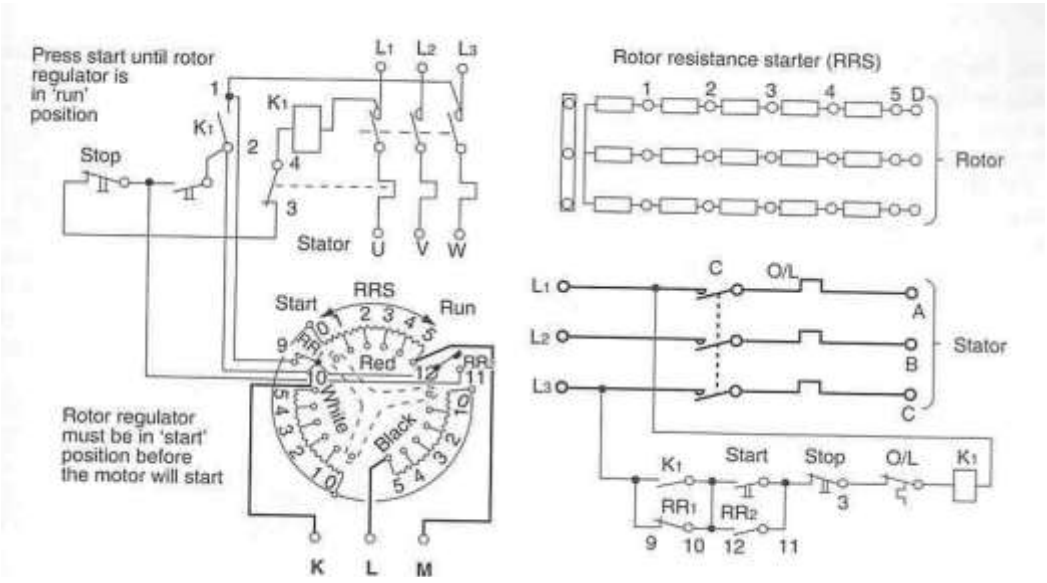
7. You would assume that a victim is in cardiac arrest if: *(tick the correct box)*

- ☐ there is no pulse
- ☐ there are no signs of breathing
- ☐ the pupils of the eyes are dilated
- ☐ all of the above signs are present.

UEENEEE007B	Use drawings, diagrams, schedules and manuals

Study the class lessons for drawing & draw and submit the following diagrams by hand drawing

(1)



(2)

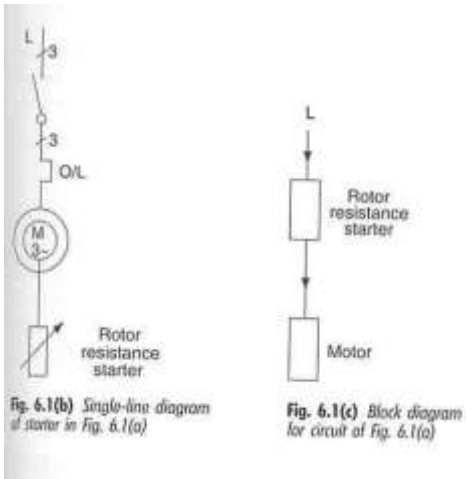
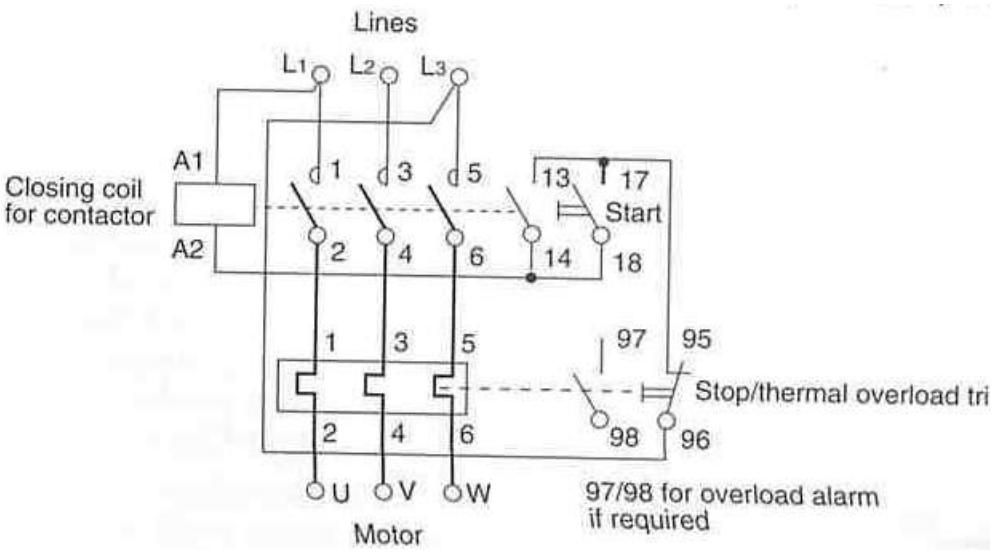


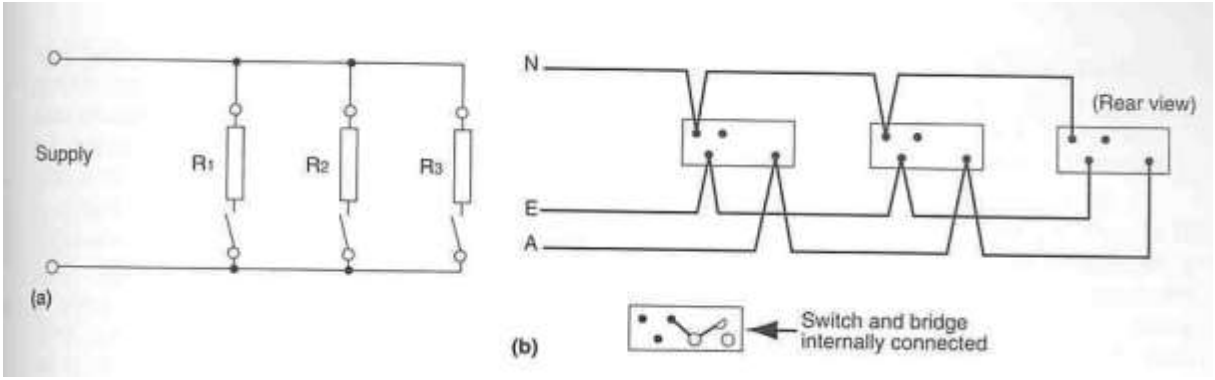
Fig. 6.1(b) *Single-line diagram of starter in Fig. 6.1(a)*

Fig. 6.1(c) *Block diagram for circuit of Fig. 6.1(a)*

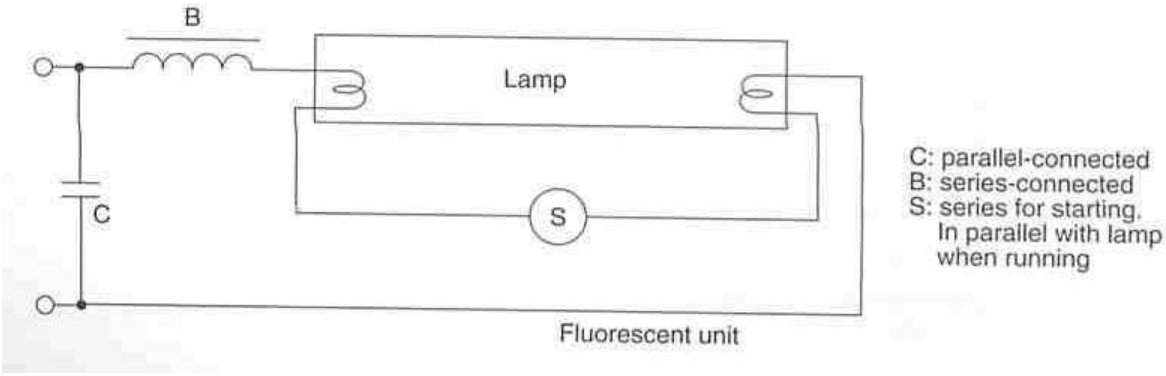
(3)


Lines
L1
L2
L3
A1
Closing coil
for contactor
A2
1
3
5
13
17
Start
2
4
6
14
18
1
3
5
97
95
Stop/thermal overload tri
2
4
6
98
96
U
V
W
97/98 for overload alarm
if required
Motor

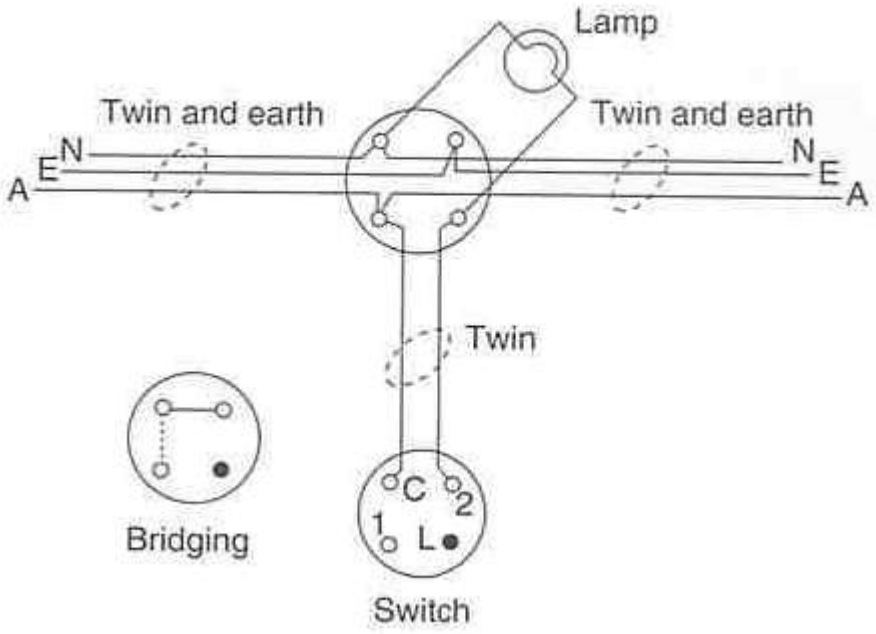
(4)


Supply
R1
R2
R3
(a)
N
(Rear view)
E
A
(b)
Switch and bridge
internally connected

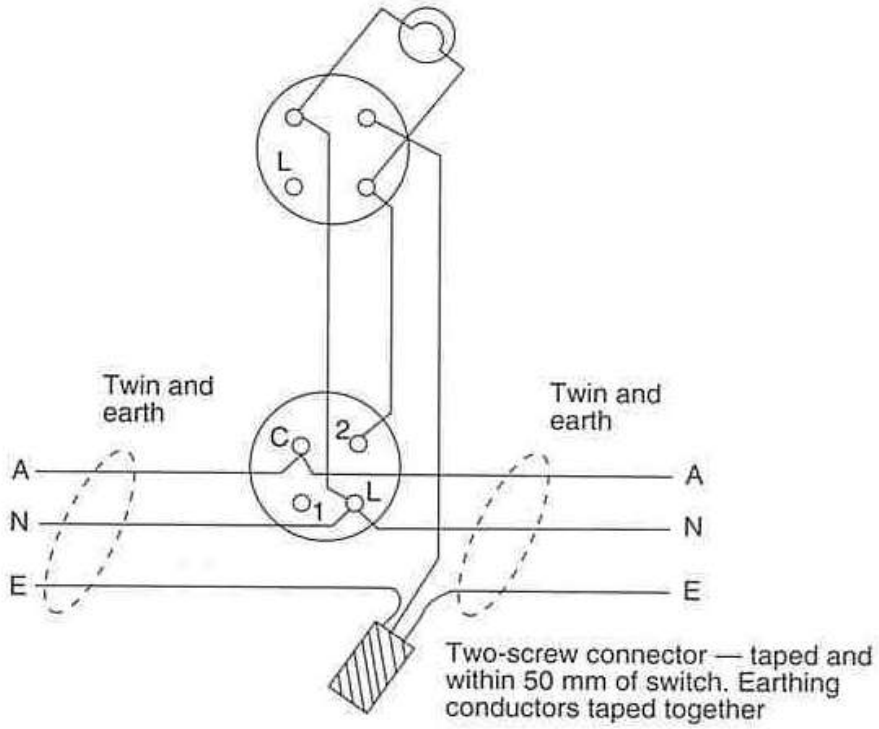
(5)


B
Lamp
C
S
Fluorescent unit
C: parallel-connected
B: series-connected
S: series for starting.
In parallel with lamp
when running

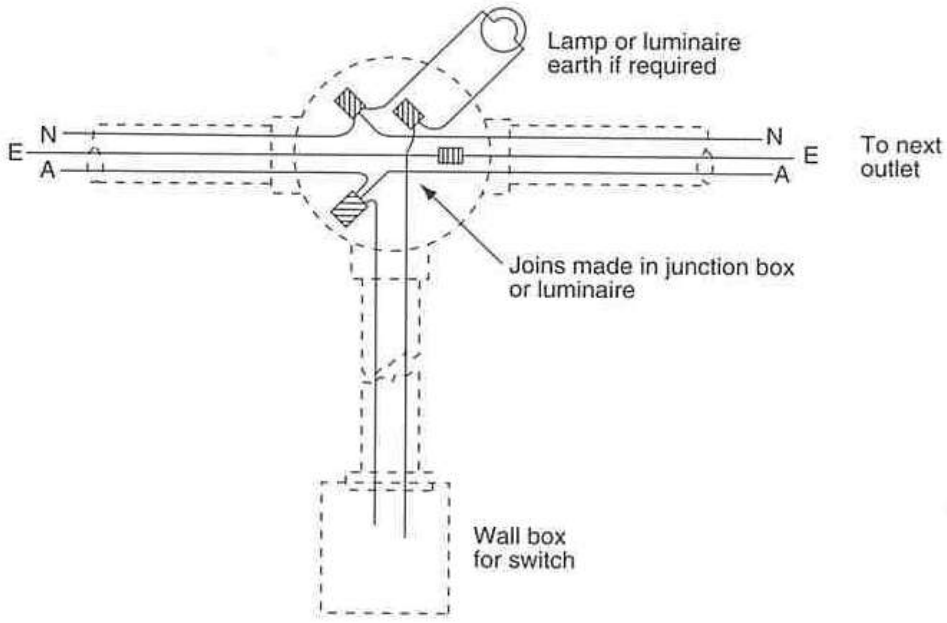
(6)


Lamp
Twin and earth
Twin and earth
N
E
A
N
E
A
Twin
C
2
1
L
Bridging
Switch

(7)


L
Twin and earth
Twin and earth
C
2
A
N
E
1
L
A
N
E
Two-screw connector — taped and within 50 mm of switch. Earthing conductors taped together

(8)



(9)

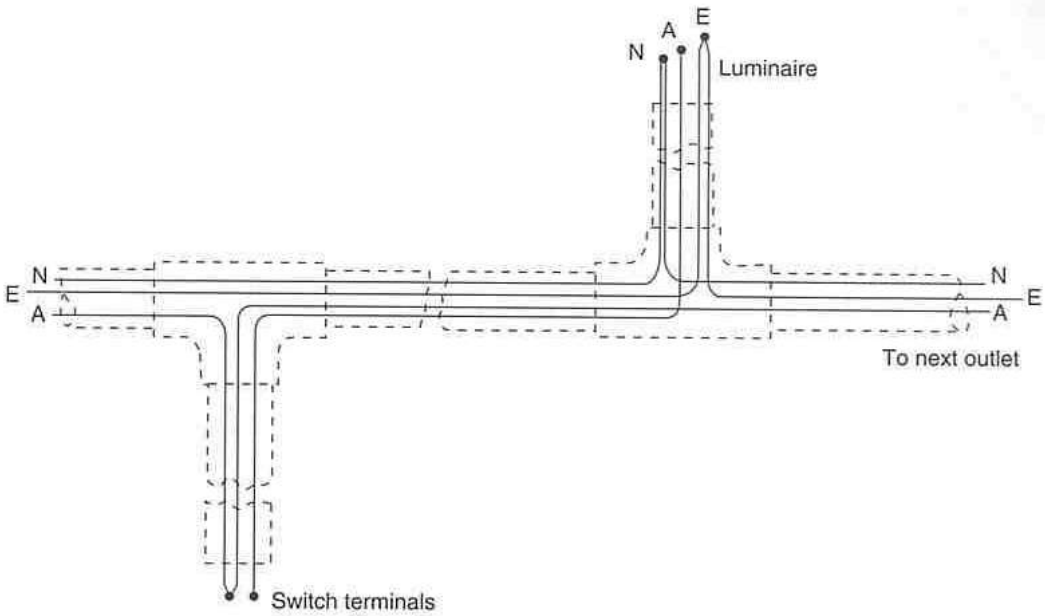
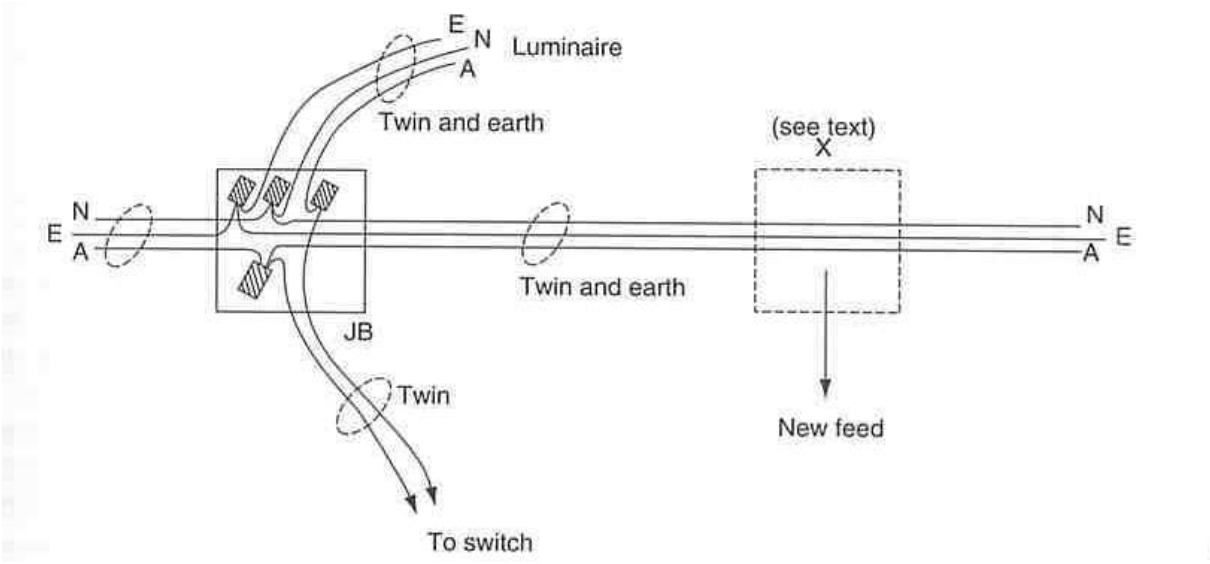


Fig. 6.10 *In this surface conduit system, actives are looped at the switch and neutrals or earths at the outlet or luminaire*



(10)

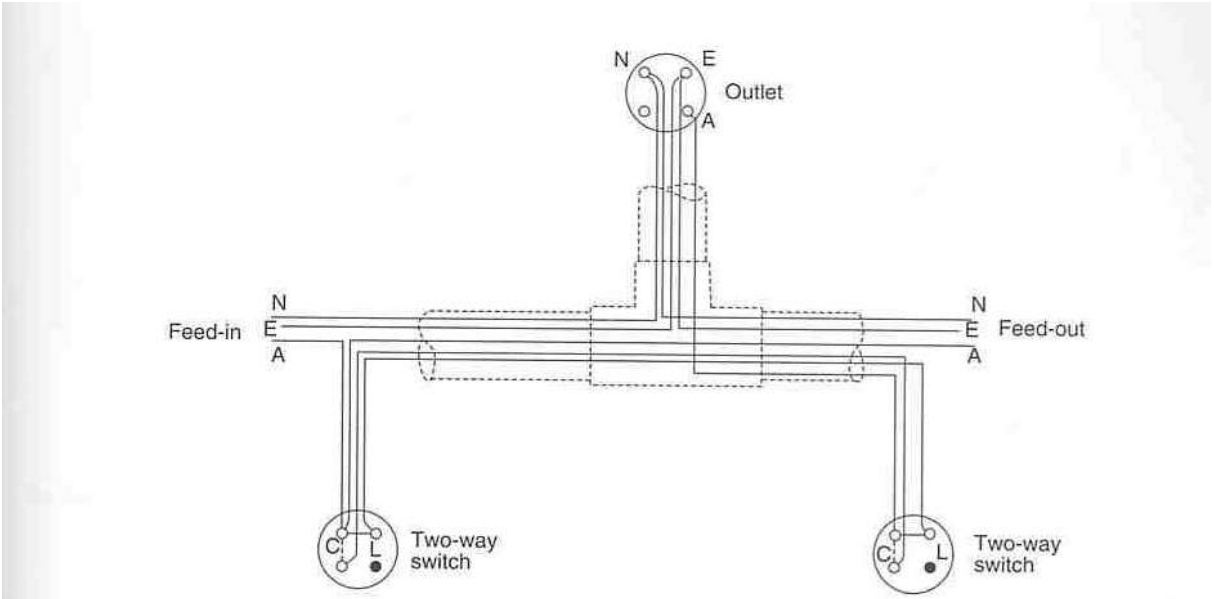
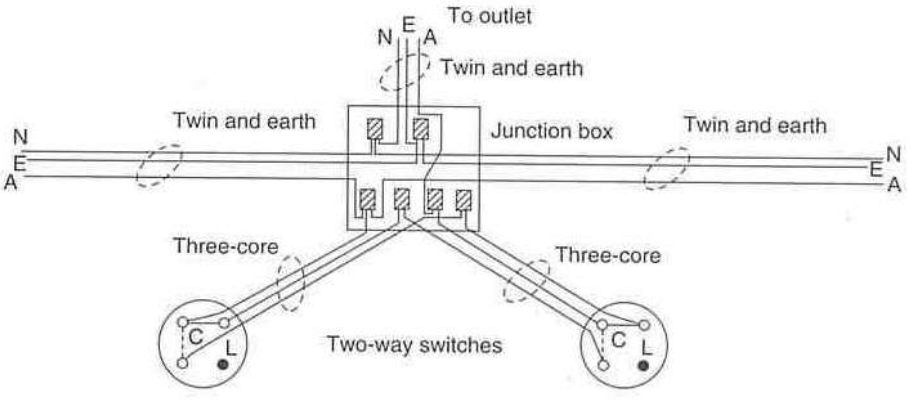
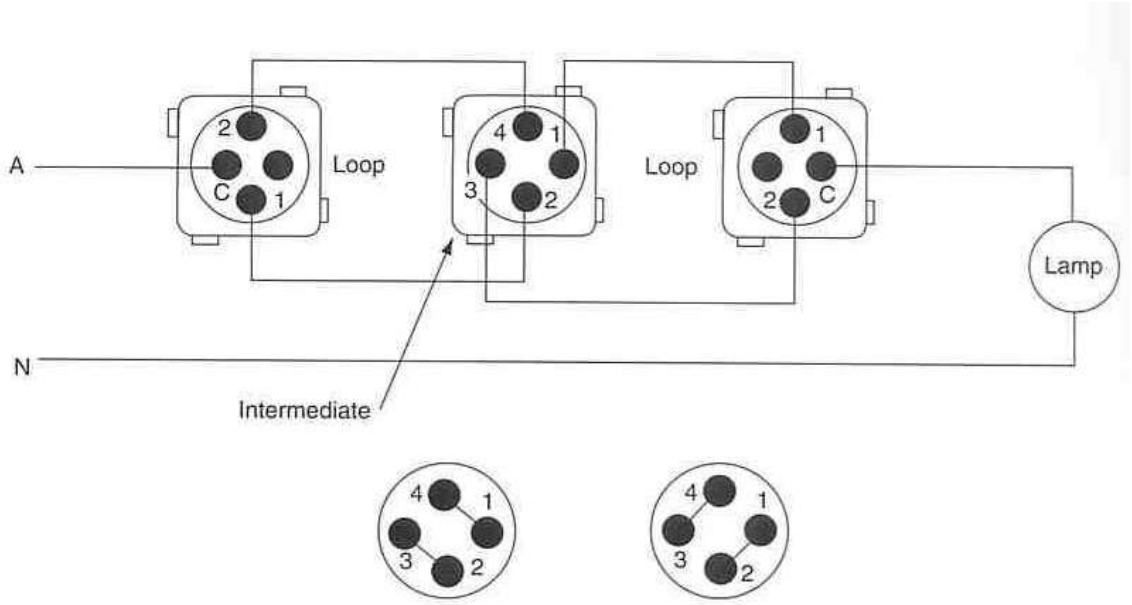


Fig. 6.17 *Connections for two-way switching using the 'looping-in' system with surface wiring in conduit*



(11)



(12)

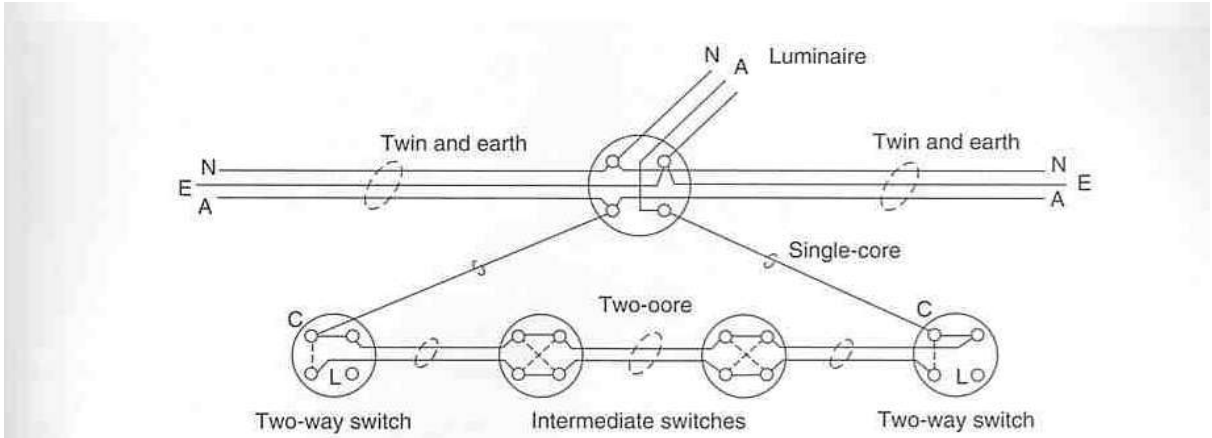
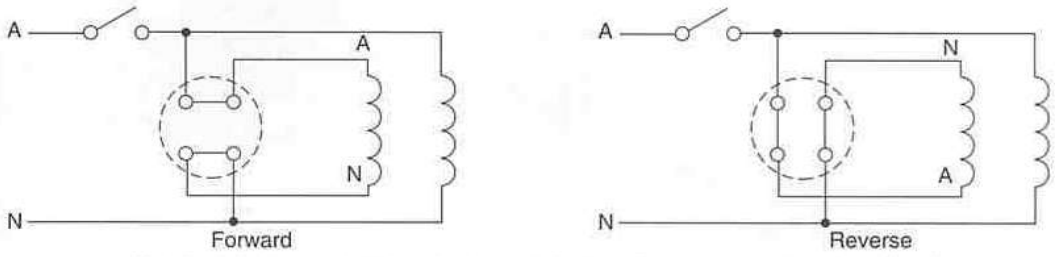


Fig. 6.22 *Multiposition control of a luminaire, using single-core, two-core, and twin and earth cable. Connection of 'strap wires' to intermediat switches depends on the internal bridging positions of switches used*



Intermediate switch reverses supply to starting winding to reverse direction of motor

(13)

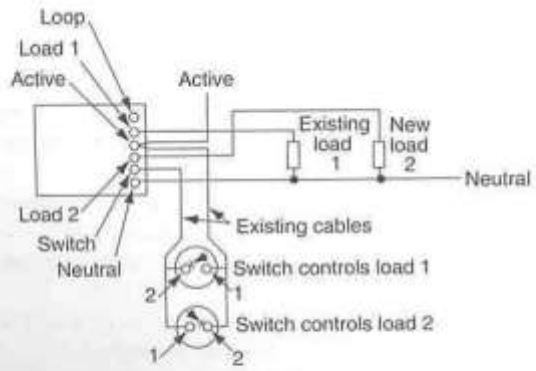


Fig. 6.24(b) *Connections and wiring diagram for switch multiplier* GERARD INDUSTRIES

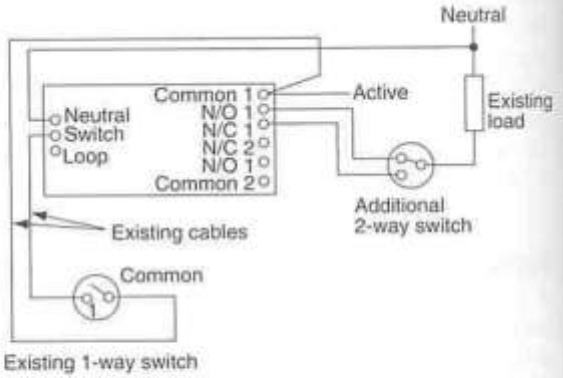
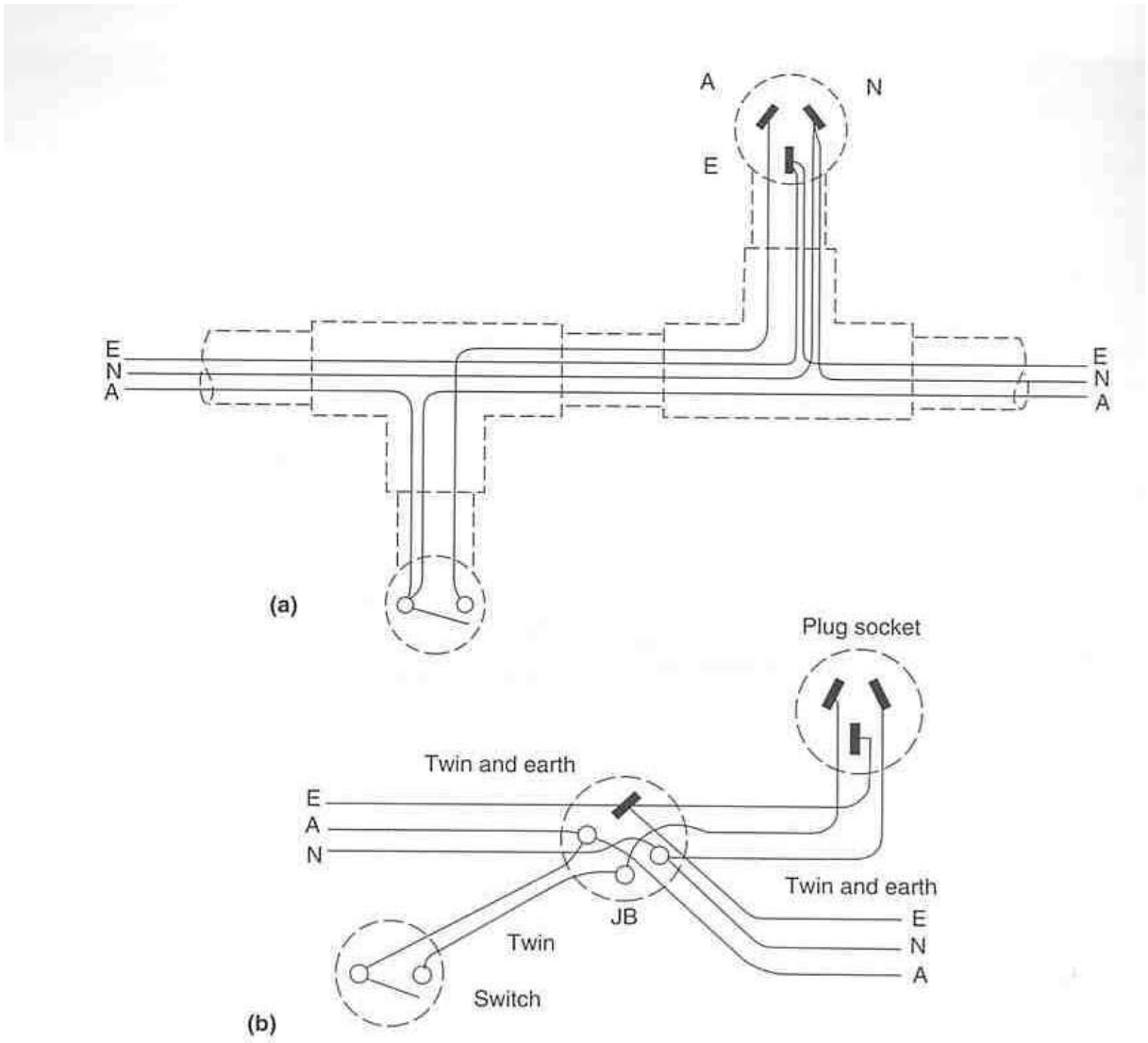
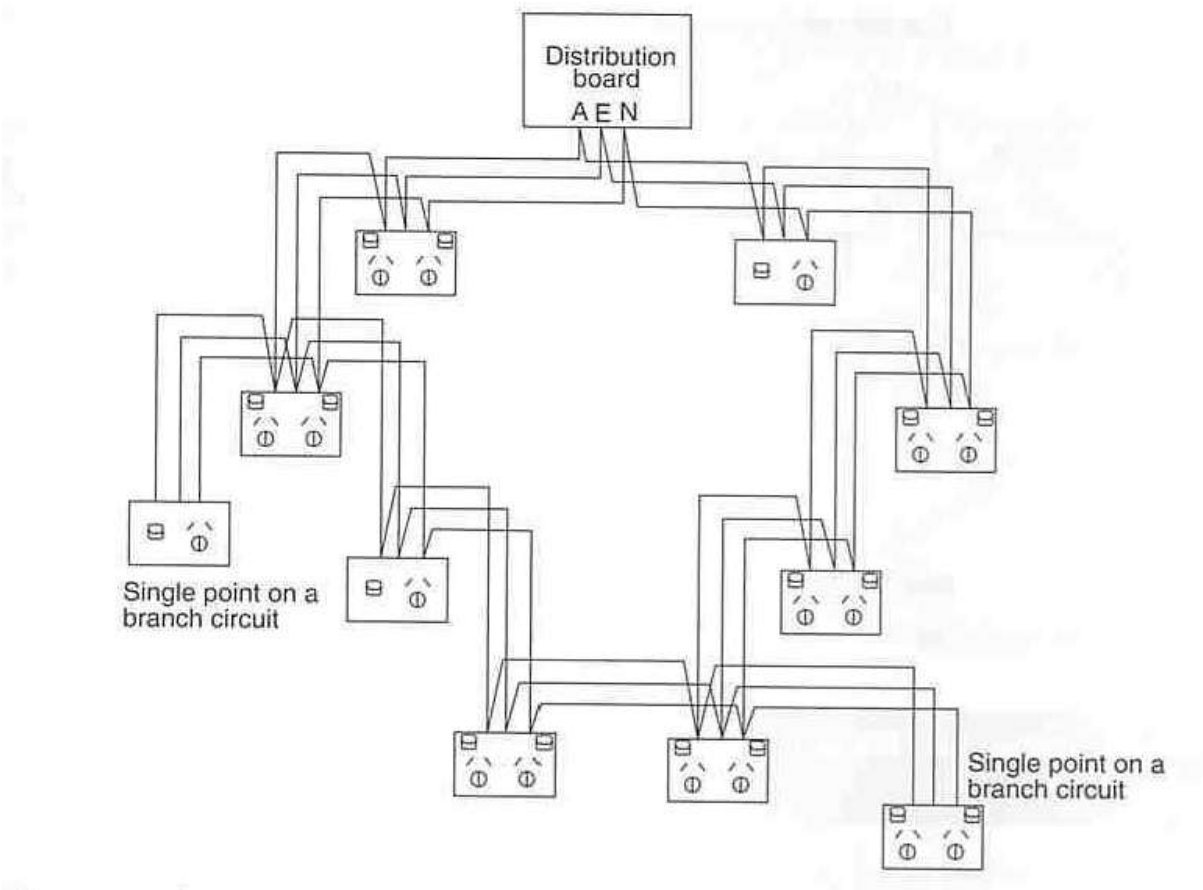


Fig. 6.25 *Conversion of existing one-way switch to two-way application using switch multiplier* GERARD INDUSTRIES

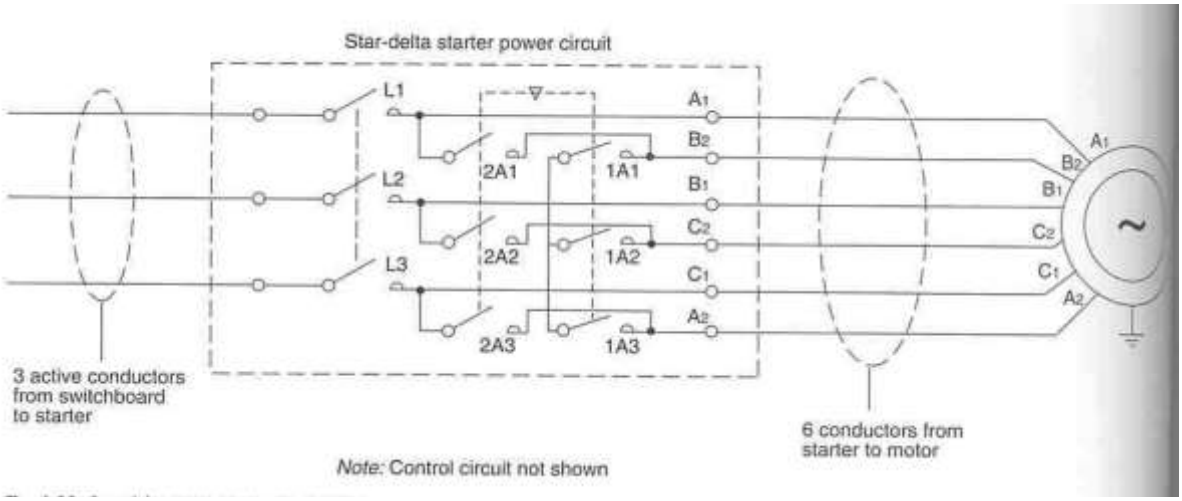
(14)



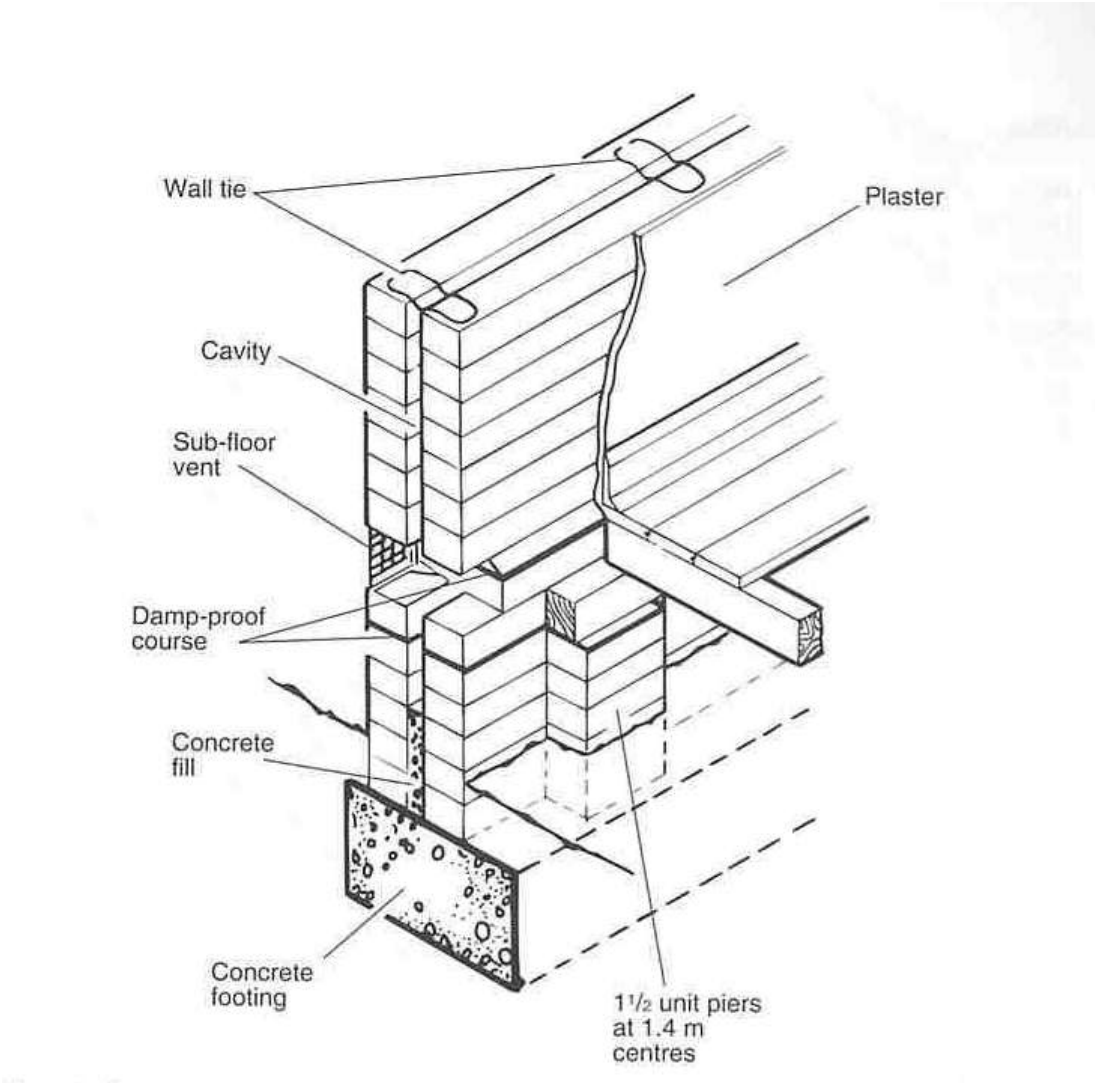
(15)


Distribution board
A E N
Single point on a branch circuit
Single point on a branch circuit

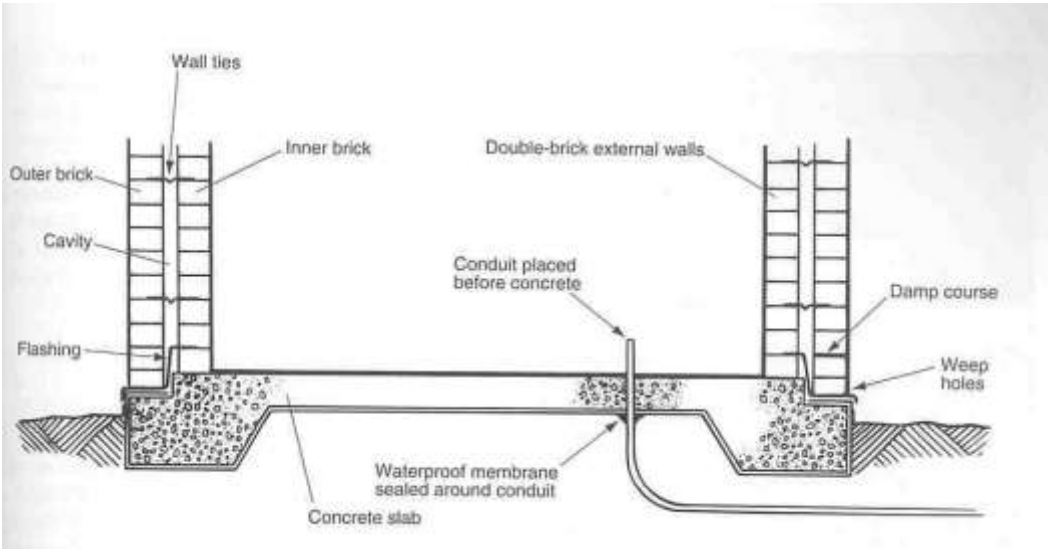
(16)


Star-delta starter power circuit
L1
L2
L3
2A1
1A1
2A2
1A2
2A3
1A3
A1
B2
B1
C2
C1
A2
3 active conductors from switchboard to starter
6 conductors from starter to motor
Note: Control circuit not shown

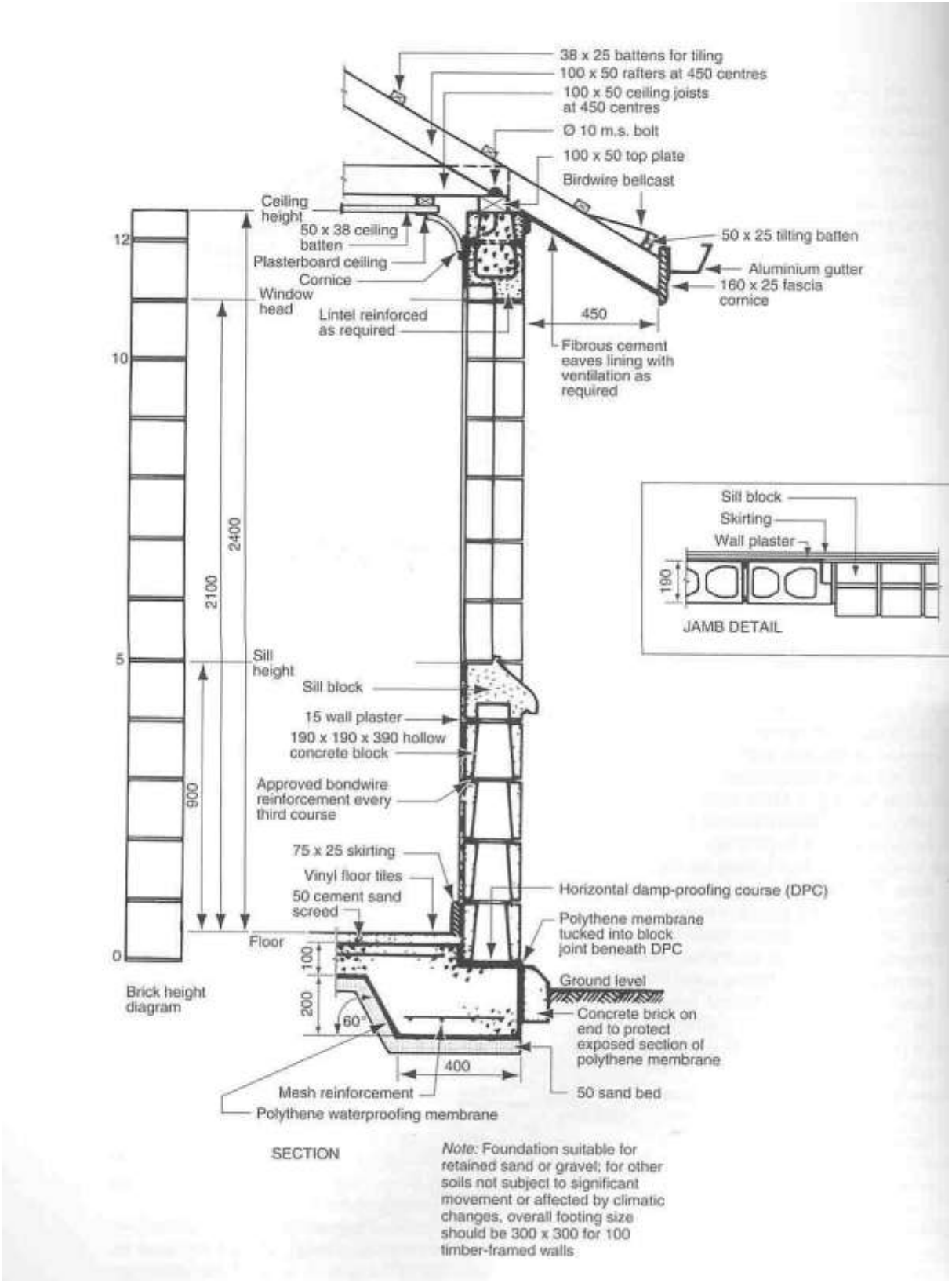
(17)


Wall tie
Plaster
Cavity
Sub-floor vent
Damp-proof course
Concrete fill
Concrete footing
1½ unit piers at 1.4 m centres

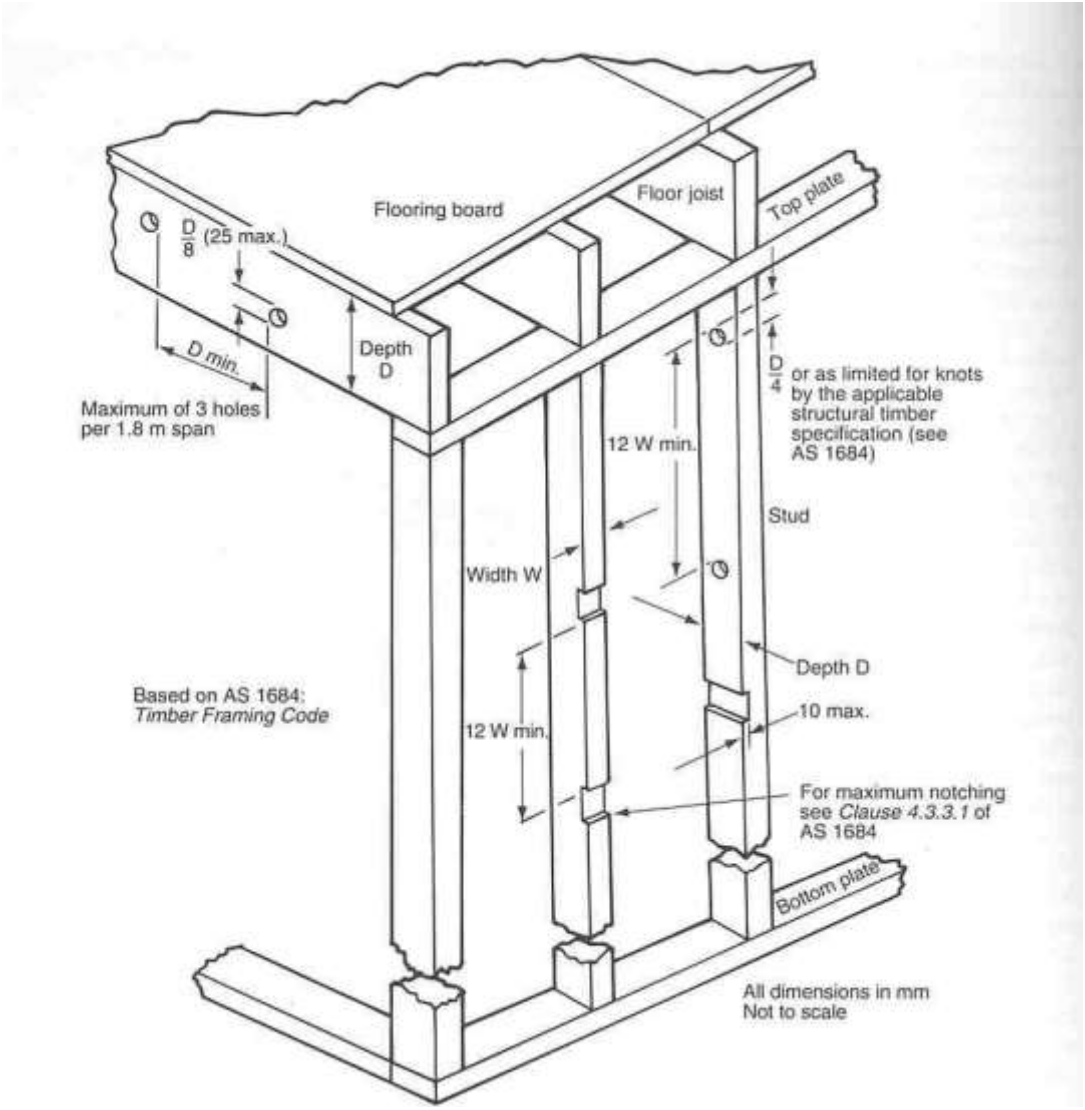
(18)


Wall ties
Inner brick
Outer brick
Double-brick external walls
Cavity
Conduit placed before concrete
Damp course
Flashing
Weep holes
Waterproof membrane sealed around conduit
Concrete slab

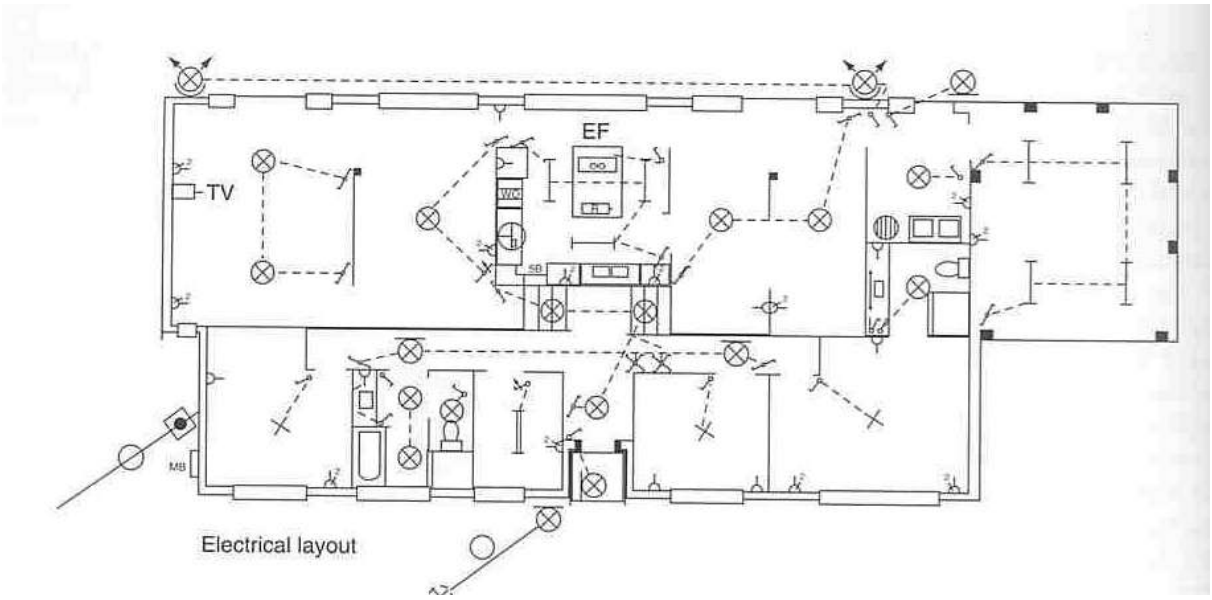
(19)


38 x 25 battens for tiling
100 x 50 rafters at 450 centres
100 x 50 ceiling joists at 450 centres
Ø 10 m.s. bolt
100 x 50 top plate
Birdwire bellcast
Ceiling height
50 x 38 ceiling batten
Plasterboard ceiling
Cornice
Window head
Lintel reinforced as required
50 x 25 tilting batten
Aluminium gutter
160 x 25 fascia cornice
450
Fibrous cement eaves lining with ventilation as required
12
10
5
0
2400
2100
900
Sill height
Sill block
15 wall plaster
190 x 190 x 390 hollow concrete block
Approved bondwire reinforcement every third course
75 x 25 skirting
Vinyl floor tiles
50 cement sand screed
Floor
100
200
60°
Brick height diagram
Horizontal damp-proofing course (DPC)
Polythene membrane tucked into block joint beneath DPC
Ground level
Concrete brick on end to protect exposed section of polythene membrane
400
Mesh reinforcement
Polythene waterproofing membrane
50 sand bed
SECTION
Note: Foundation suitable for retained sand or gravel; for other soils not subject to significant movement or affected by climatic changes, overall footing size should be 300 x 300 for 100 timber-framed walls
Sill block
Skirting
Wall plaster
190
JAMB DETAIL

(20)


Flooring board
Floor joist
Top plate
D/8 (25 max.)
D min.
Depth D
Maximum of 3 holes per 1.8 m span
D/4 or as limited for knots by the applicable structural timber specification (see AS 1684)
12 W min.
Stud
Width W
Depth D
10 max.
12 W min.
Based on AS 1684: Timber Framing Code
For maximum notching see Clause 4.3.3.1 of AS 1684
Bottom plate
All dimensions in mm
Not to scale

(21)


EF
TV
WC
SB
MB
Electrical layout

(22)

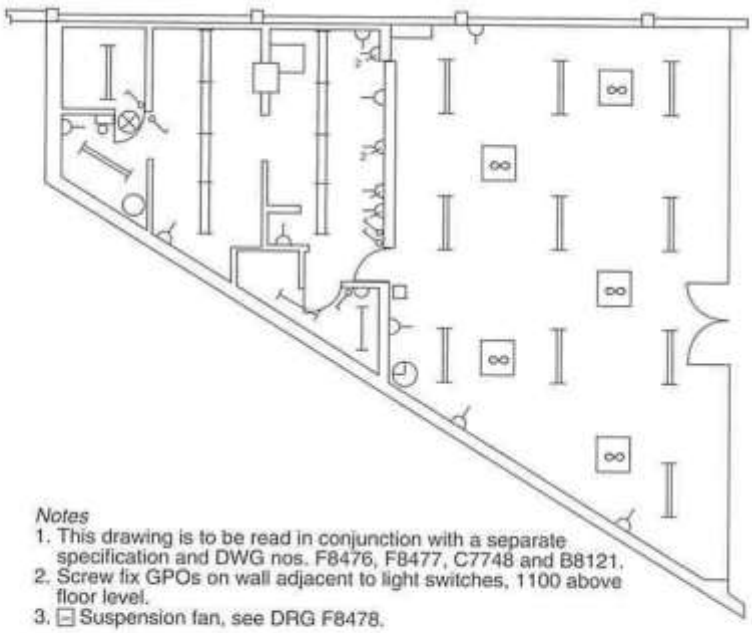
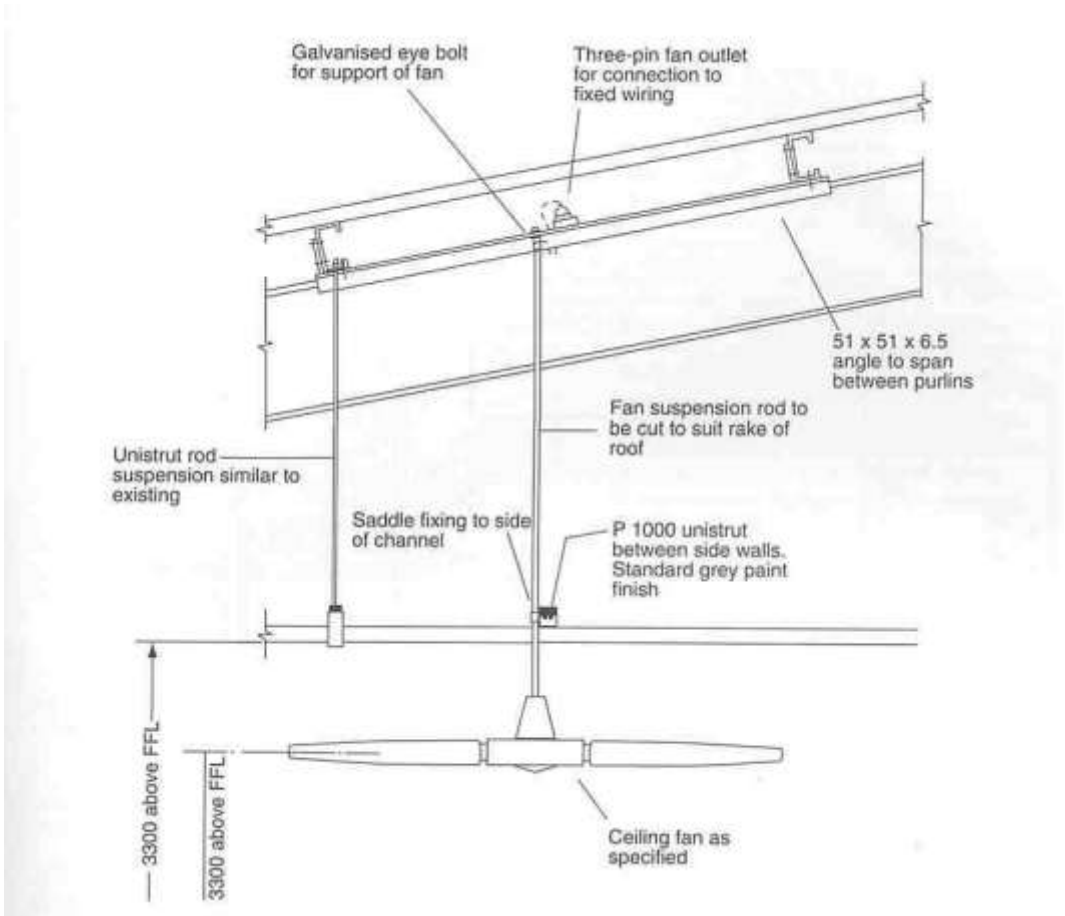
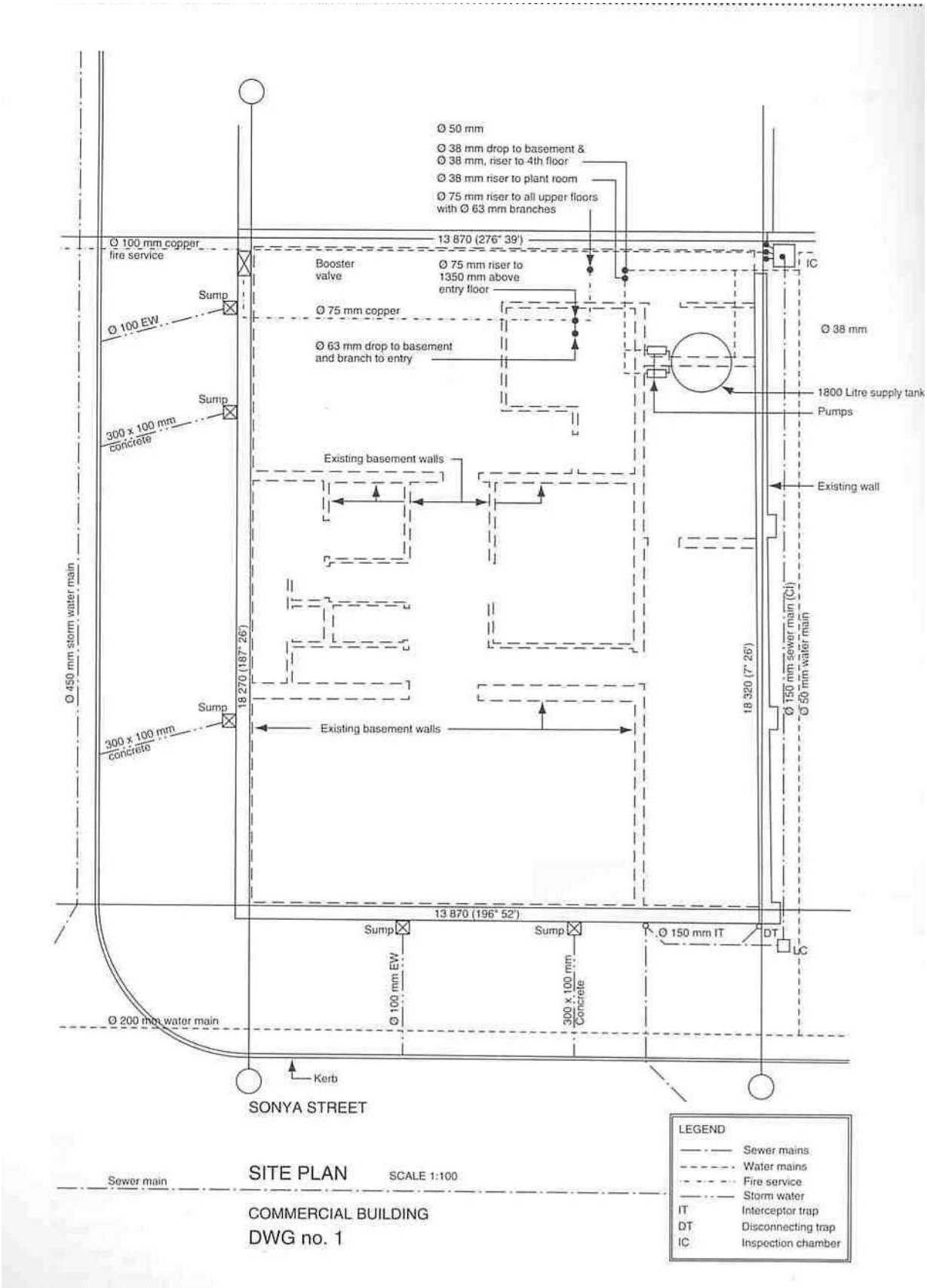


Fig. 6.40 *Electrical plan for a small canteen* TAFE COMMISSION, NSW

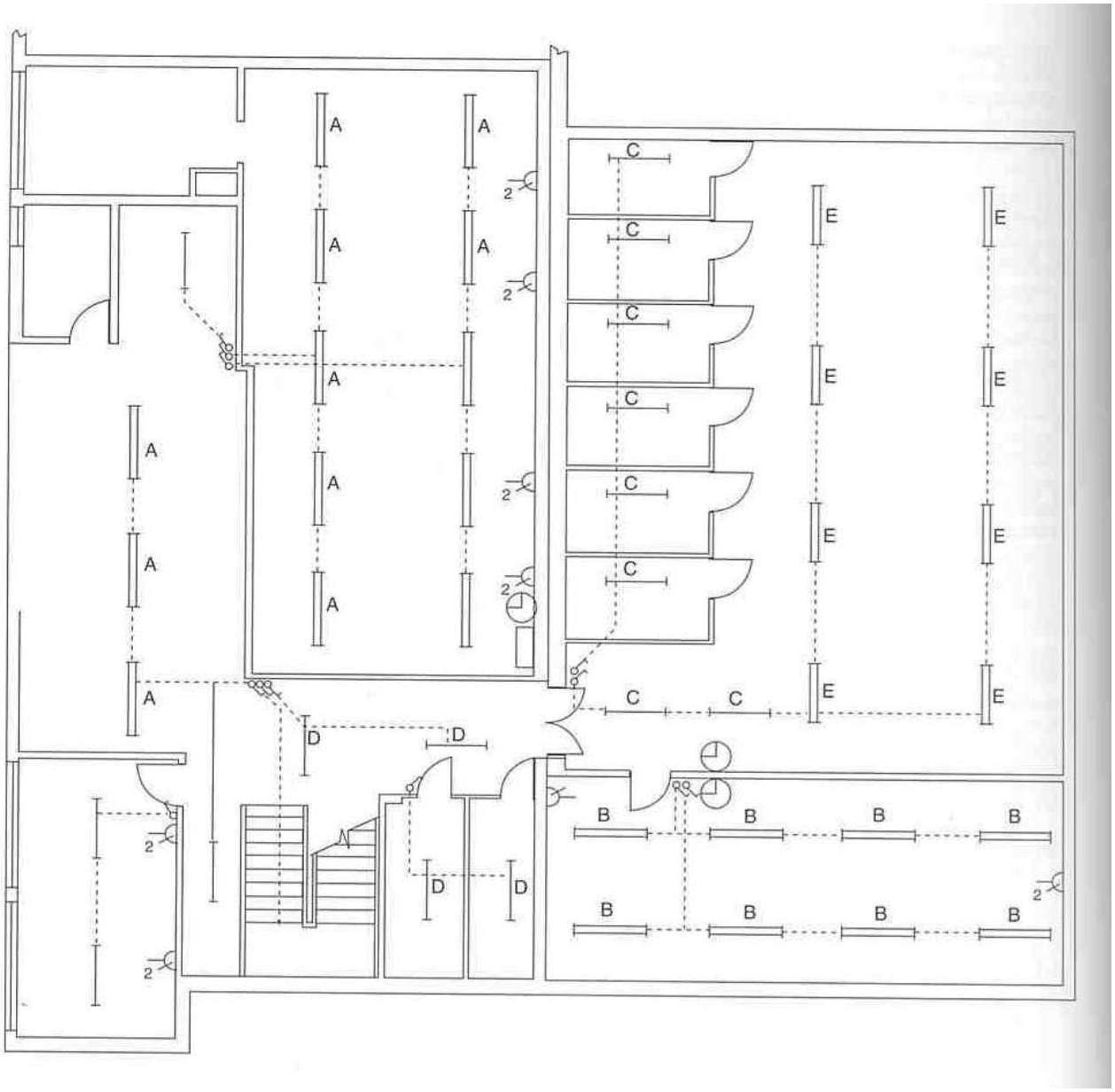
(23)



(24)


Ø 50 mm
Ø 38 mm drop to basement &
Ø 38 mm, riser to 4th floor
Ø 38 mm riser to plant room
Ø 75 mm riser to all upper floors
with Ø 63 mm branches
13 870 (276° 39')
Ø 100 mm copper
fire service
Booster
valve
Ø 75 mm riser to
1350 mm above
entry floor
IC
Sump
Ø 100 EW
Ø 75 mm copper
Ø 38 mm
Ø 63 mm drop to basement
and branch to entry
1800 Litre supply tank
Pumps
Sump
300 x 100 mm
concrete
Existing basement walls
Existing wall
Ø 450 mm storm water main
18 270 (187° 26')
18 320 (7° 26')
Ø 150 mm sewer main (CI)
Ø 50 mm water main
Sump
300 x 100 mm
concrete
Existing basement walls
13 870 (196° 52')
Sump
Sump
Ø 150 mm IT
DT
IC
Ø 100 mm EW
300 x 100 mm
Concrete
Ø 200 mm water main
Kerb
SONYA STREET
LEGEND
Sewer mains
Water mains
Fire service
Storm water
IT Interceptor trap
DT Disconnecting trap
IC Inspection chamber
Sewer main
SITE PLAN
SCALE 1:100
COMMERCIAL BUILDING
DWG no. 1

(25)



(26)

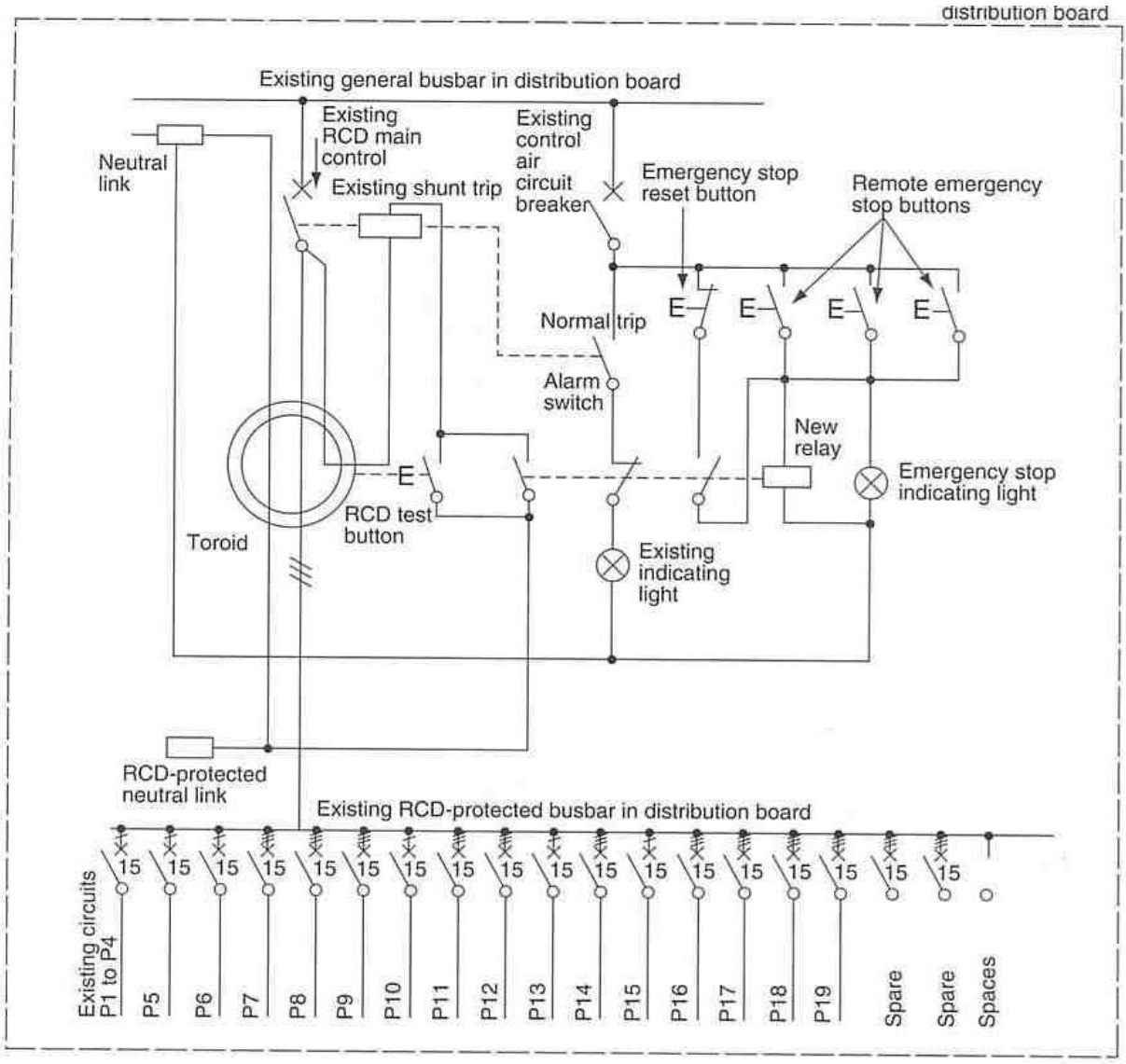
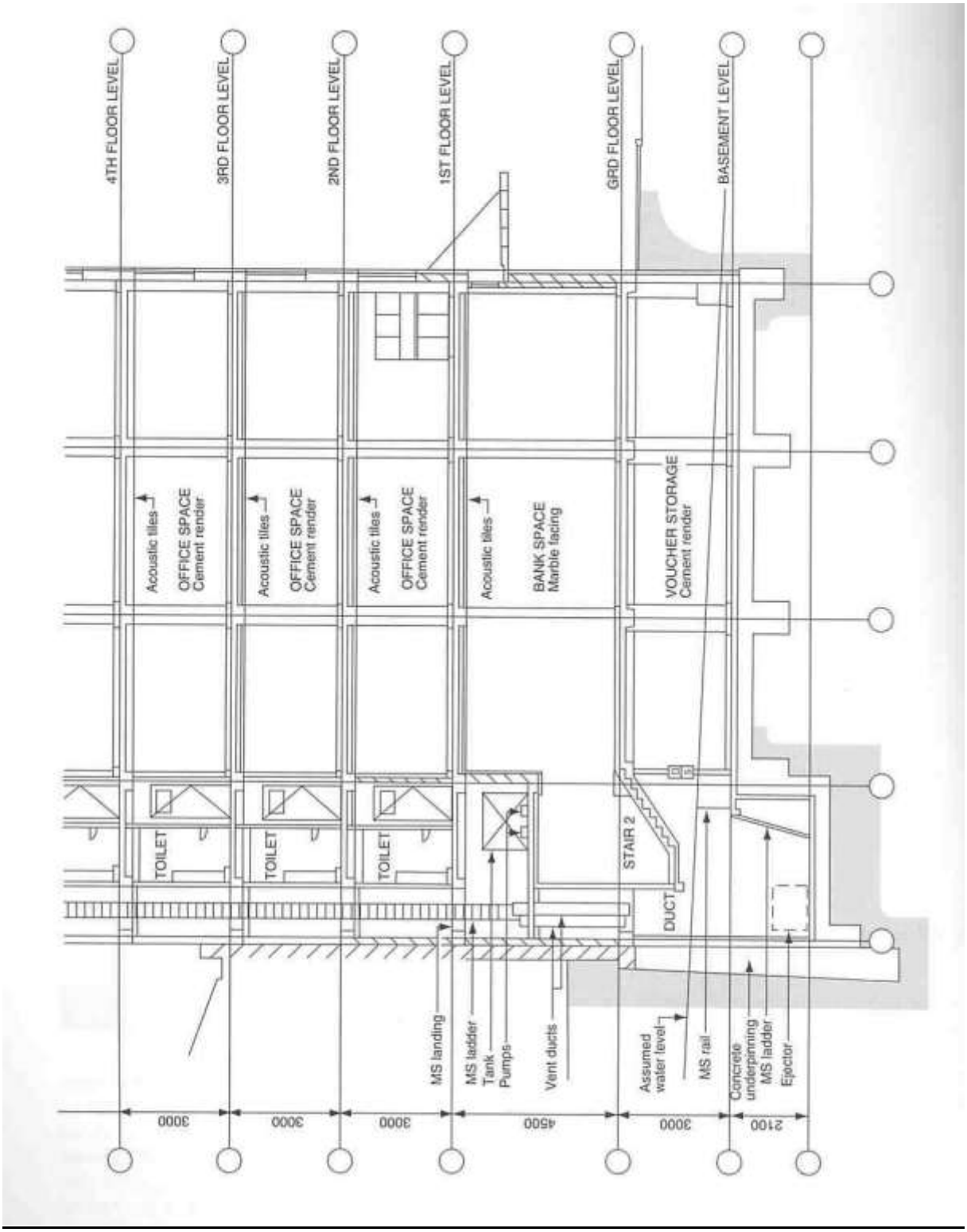


Fig. 6.44 *Single-line diagram of additions to a distribution board* TAFE COMMISSION, NSW

(27)


4TH FLOOR LEVEL
3RD FLOOR LEVEL
2ND FLOOR LEVEL
1ST FLOOR LEVEL
GRD FLOOR LEVEL
BASEMENT LEVEL
Acoustic tiles
OFFICE SPACE
Cement render
Acoustic tiles
OFFICE SPACE
Cement render
Acoustic tiles
OFFICE SPACE
Cement render
Acoustic tiles
BANK SPACE
Marble facing
VOUCHER STORAGE
Cement render
TOILET
TOILET
TOILET
STAIR 2
DUCT
MS landing
MS ladder
Tank
Pumps
Vent ducts
Assumed water level
MS rail
Concrete underpinning
MS ladder
Ejector
3000
3000
3000
4500
3000
2100

5. Excessive vibration can be controlled and prevented. List **five** ways in which this can be achieved.

- _____
- _____
- _____
- _____
- _____

6. What is noise?

_____

_____

7. What are the long term effects of exposure to noise?

_____

_____

8. List general methods of noise reduction.

_____

_____

9. What are the psychological symptoms of stress?

_____

_____

10. What are some of the physiological symptoms of stress?

_____

_____

11. What are some of the effects of alcohol consumption on the human body?

12. What is the O.O.S. and what are some of its symptoms?

Review questions

This section will help you revise what you have learnt in Section 5.

1. List effects that electricity can have on the human body.

_____

_____

2. List **three** major hazards connected with electricity.

- _____
- _____
- _____

3. What care should be taken when using electric tools?

_____

_____

4. Electrical and electronic equipment can sometimes be fitted with "safety interlock" switches to doors and covers. State the reasons for this safety feature._

_____

_____

5. What is the special safety feature of Residual Current Devices (RCDs), sometimes referred to as a safety switch?_

_____

_____

6. Can RCDs give the consumer complete electrical protection? Give reasons for your answer._

_____

_____

7. If electrical equipment is "locked off" who should retain the keys until all the maintenance work is finished?

_____

_____

8. When should a worker place a "danger tag" on electrical equipment?

_____

_____

9. Double insulated portable tools provide additional safety protection from electric shock. All such tools are marked DOUBLE INSULATED DO NOT EARTH. Why should double insulated equipment never be earthed?

_____

_____

Review questions

This section will help you revise what you have learnt in Section 6.

1. Describe the procedures you would use to remove a victim from what is believed to be a live electrical situation.

2. What procedures for rescue should occur if the voltage is known to be 1000 volts or above?

Review questions

This section will help you revise what you have learnt in Section 7.

1. When an accident occurs and a person is injured, it is most important to ensure that: *(tick the correct box)*

   - ☐ no further injury occurs to the victim
   - ☐ the ambulance is called
   - ☐ no injury occurs to rescuers
   - ☐ no damage occurs to property.

2. The *ABC* of first aid represents: *(tick the correct box)*

   - ☐ airway, breathing, conscious
   - ☐ airway, breeding, conscious
   - ☐ airway, breathing, circulation
   - ☐ airway, bleeding, circulation.

3. The best place to feel for a victim's pulse is in the carotid artery which is located on the: *(tick the correct box)*

   - ☐ side of the Adam's apple
   - ☐ rear of the left ear
   - ☐ inside of the thigh
   - ☐ chest above the sternum.

4. The occupational health and safety (first aid) regulation states the requirements for the provision of first aid in the workplace, including: *(tick the correct box)*

   - ☐ a first-aid facility
   - ☐ first-aid equipment and personnel
   - ☐ a register of injuries and treatment
   - ☐ all of the above.

5. DRABC is an abbreviation of the priorities for a first-aid action plan. Complete the words below.

D _____

R _____

A _____

B _____

C _____

6. If you are alone and you have to give first aid, what should you do about telephoning for help? *(tick the correct box)*

- ☐ stabilise the victim and then phone
- ☐ quickly telephone and then give emergency care
- ☐ concentrate on emergency care and not take time to phone
- ☐ perform the ABCs of emergency care for one minute and then phone.

7. You would assume that a victim is in cardiac arrest if: *(tick the correct box)*

- ☐ there is no pulse
- ☐ there are no signs of breathing
- ☐ the pupils of the eyes are dilated
- ☐ all of the above signs are present.