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# Practical Jobs 1 to 8

## PVC Wiring

## Practical Job 1

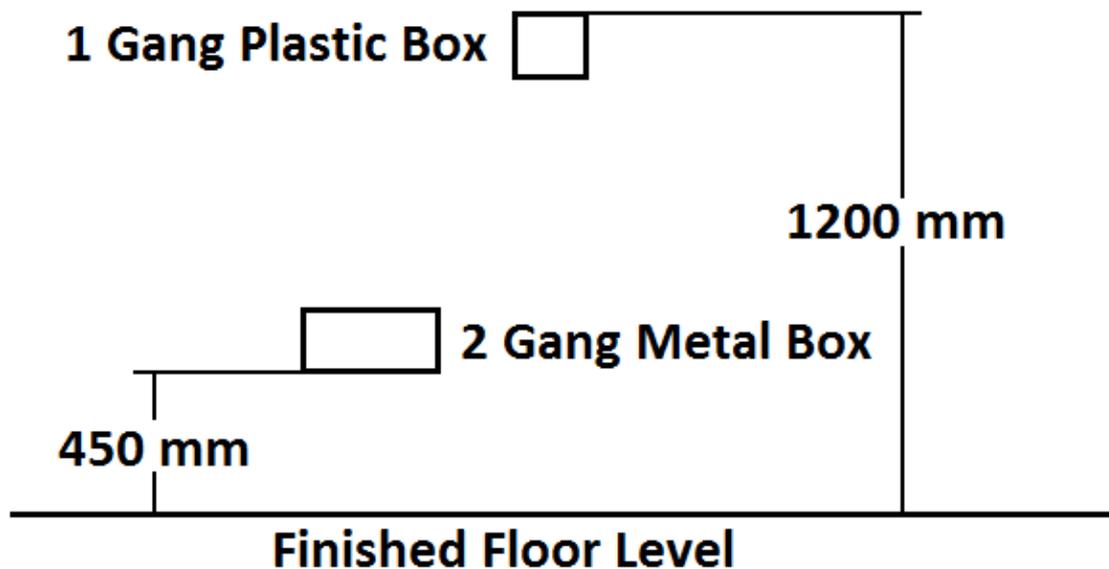
### Site Skills (Power Tools)

Learner Name ..... Start Date .....

#### Instruction to Learner

Using either an electric drill or battery drill fitted with a 5.5 masonry bit, securely fix, using countersunk screws for the one gang plastic box and using round head screws a 2 gang metal socket box to the following surfaces:

- A) Composite block wall screw length minimum of 1½ inch N°8 and red wall plugs.
- B) Brick wall screw length minimum of 1 inch N°8 and red wall plugs
- C) Wood surface (drill and red wall plugs not required) screw length minimum of ¾ inch N°8



**Dimensions may alter**



## Practical Job 2

### PVC Wiring Terminating (Flexible Cable)

Learner Name ..... Start Date .....

#### Instruction to Learner

Prepare and terminate a suitable length of flexible cable into each of the following electrical accessories.

1. BS1363 13 amp fused plug top



2. Ceiling rose



3. Lampholder



4. BS EN 60309-2 3 pin industrial plug

| Marking Criteria                           | 13 amp plug | Ceiling rose | Lamp holder | 3 pin plug |
|--|-------------|--------------|-------------|------------|
| Job carried out in a safe manner           |             |              |             |            |
| All accessories undamaged and assembled    |             |              |             |            |
| Acceptable insulation removed              |             |              |             |            |
| Correct termination of conductors          |             |              |             |            |
| Acceptable amount of spare at terminations |             |              |             |            |
| Terminations tight                         |             |              |             |            |
| Conductor insulation not damaged           |             |              |             |            |
| Sheath taken into accessories              |             |              |             |            |
| Use of cord grip                           |             |              |             |            |
| Core free from whiskers                    |             |              |             |            |
| Worked safely                              |             |              |             |            |
| Work area tidy                             |             |              |             |            |

**What did you learn...**

**Assessor Feedback**

Assessor ..... Date .....

## Practical Job 3

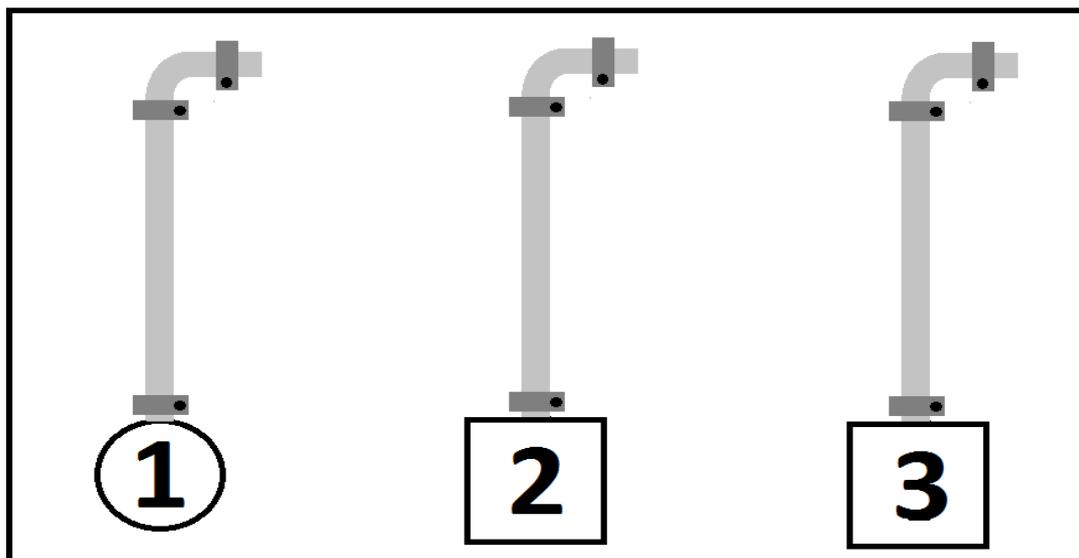
### PVC/PVC Flat Profile Cable Wiring (Into Accessories)

Learner Name ..... Start Date .....

#### Instruction to Learner

On a wooden board, fix one lighting pattress and two surface light switch boxes. Clip the following cables and make off the following accessories into the boxes you have already fixed.

1. Surface clip one 1.0mm<sup>2</sup> thermoplastic PVC flat profile twin and CPC cable (brown & blue conductor colours) approximately 500 mm long with one smooth right angle bend and terminate end into a ceiling rose.
2. Surface clip one 1.0mm<sup>2</sup> thermoplastic PVC flat profile twin and CPC twin brown cable (brown & brown conductor colours) approximately 500 mm long with one smooth right angle bend and terminate end into a one gang one way switch.
3. Surface clip one 1.0mm<sup>2</sup> thermoplastic PVC 3 core flat profile and CPC cable (brown, black and grey conductor colours) approximately 500 mm long with one smooth right angle bend and terminate end into a one gang two way switch.





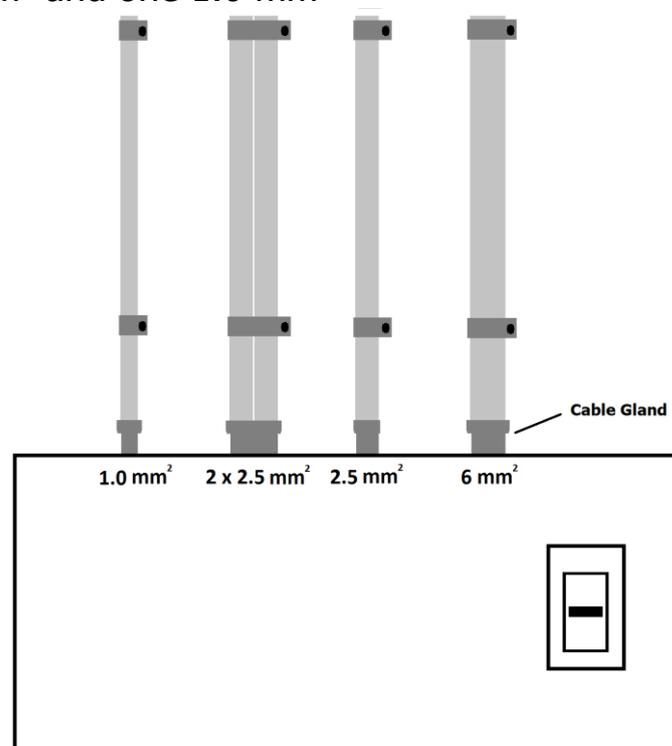
## Practical Job 4

### PVC/PVC Flat Profile Cable Wiring (7 way consumer unit)

Learner Name ..... Start Date .....

#### Instruction to Learner

On a wooden surface at a position identified by your instructor, mount a metal 7 way consumer unit. Install the PVC flat profile twin and CPC cables as per drawing one 6.0 mm<sup>2</sup>, one 2.5 mm<sup>2</sup>, two x 2.5 mm<sup>2</sup> and one 1.0 mm<sup>2</sup>



#### Consumer unit layout

BS EN 60689 circuit breaker number one is 32 amps

cooker circuit

BS EN 60689 circuit breaker number two is 32 amps ring  
final circuit

BS EN 60689 circuit breaker number three is 20 amps an  
A 3 radial socket circuit

BS EN 60689 circuit breaker number four is 6 amps

lighting circuit

## Practical Job 4

### PVC/PVC Flat Profile Cable Wiring (7 way consumer unit)

| Marking Criteria                          | Completed |
|---|-----------|
| Job carried out in a safe manner          |           |
| All accessories undamaged and assembled   |           |
| Acceptable insulation removed             |           |
| Correct termination of conductors         |           |
| Conductor insulation not damaged          |           |
| Acceptable amount of spare at termination |           |
| Cables clipped straight and flat          |           |
| Acceptable clipped distance               |           |
| Correct layout of conductors              |           |
| Correct torque settings                   |           |
| Worked safely                             |           |
| Work area tidy                            |           |

**What did you learn...**

**Assessor Feedback**

Assessor ..... Date .....

## Practical Job 5

### PVC/PVC Flat Profile Wiring 1 (Simple Lighting Circuit)

Learner Name ..... Start Date .....

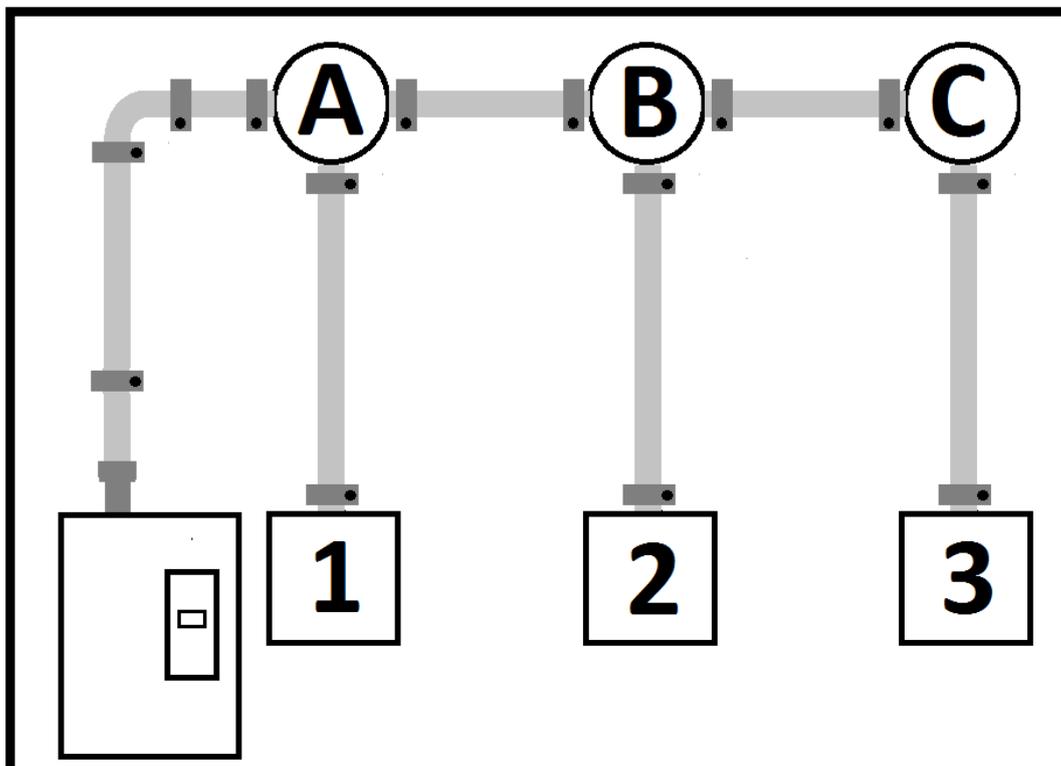
#### Instruction to Learner

On a wooden board layout the 3 surface light switch boxes, 3 round lighting pattress and 1 two way 45 amp consumer unit. Then surface wire and clip in flat profile 1.0mm<sup>2</sup> thermoplastic PVC and CPC cables to produce the lighting circuit shown below. The circuit should be tested and marked after each of the '3' stages. All cables should be clipped straight, flat and have acceptable bending radius.

Stage 1 : Light 'A' switched via switch '1' (1 way switching)

Stage 2 : Light 'B' switched via switch '2' (1 way switching)

Stage 3 : Light 'C' switched via switch '3' (1 way switching)







## Practical Job 6

### PVC/PVC Flat Profile Wiring 2 (Simple Lighting Circuit)

Learner Name ..... Start Date .....

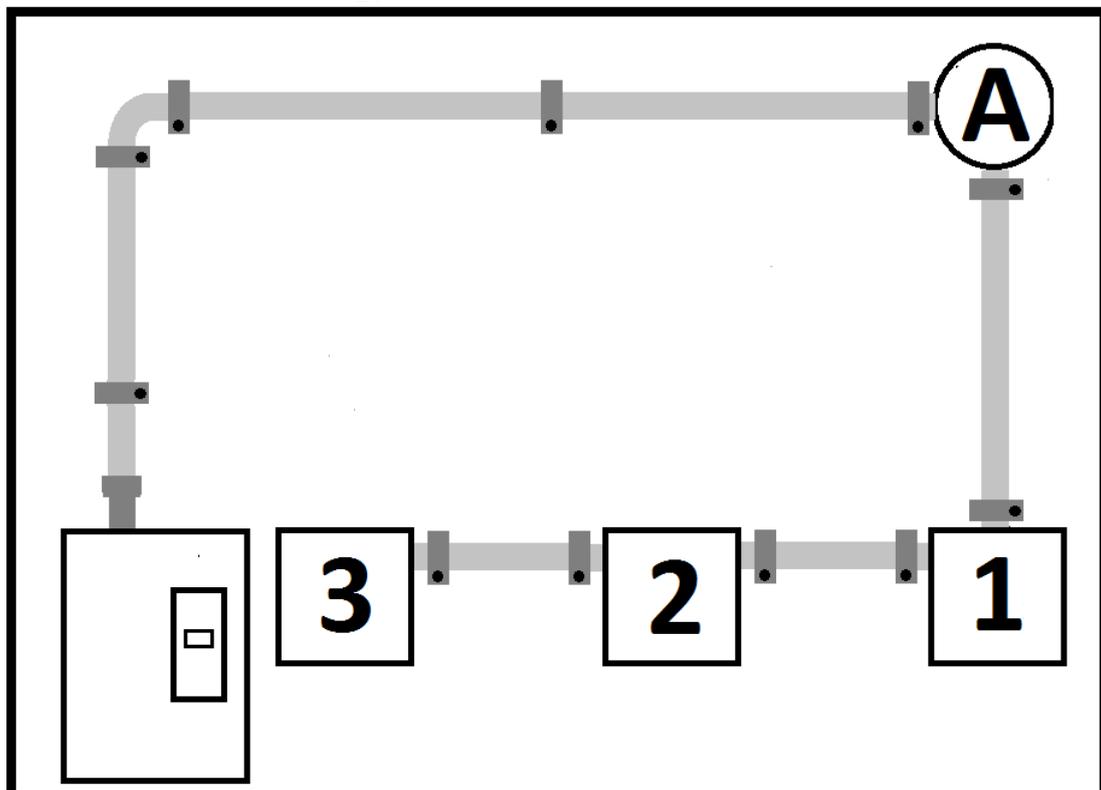
#### Instruction to Learner

On a wooden board layout the 3 surface light switch boxes, 1 round lighting pattress and 1 two way 45 amp consumer unit. Then surface wire and clip in flat profile 1.0mm<sup>2</sup> thermoplastic PVC and CPC cables to produce the lighting circuit shown below. The circuit should be tested and marked after each of the '3' stages. All cables should be clipped straight, flat and have acceptable bending radius.

Stage 1 : Light 'A' switched via switch '1' (1 way switching)

Stage 2 : Light 'A' switched via switch '1' and '2' (2 way switching)

Stage 3 : Light 'A' switched via switch '1', '2' and '3' (2 way and intermediate switching)







## Practical Job 7

### PVC/PVC Flat Profile Wiring 3 (Simple Socket Circuit 'A3')

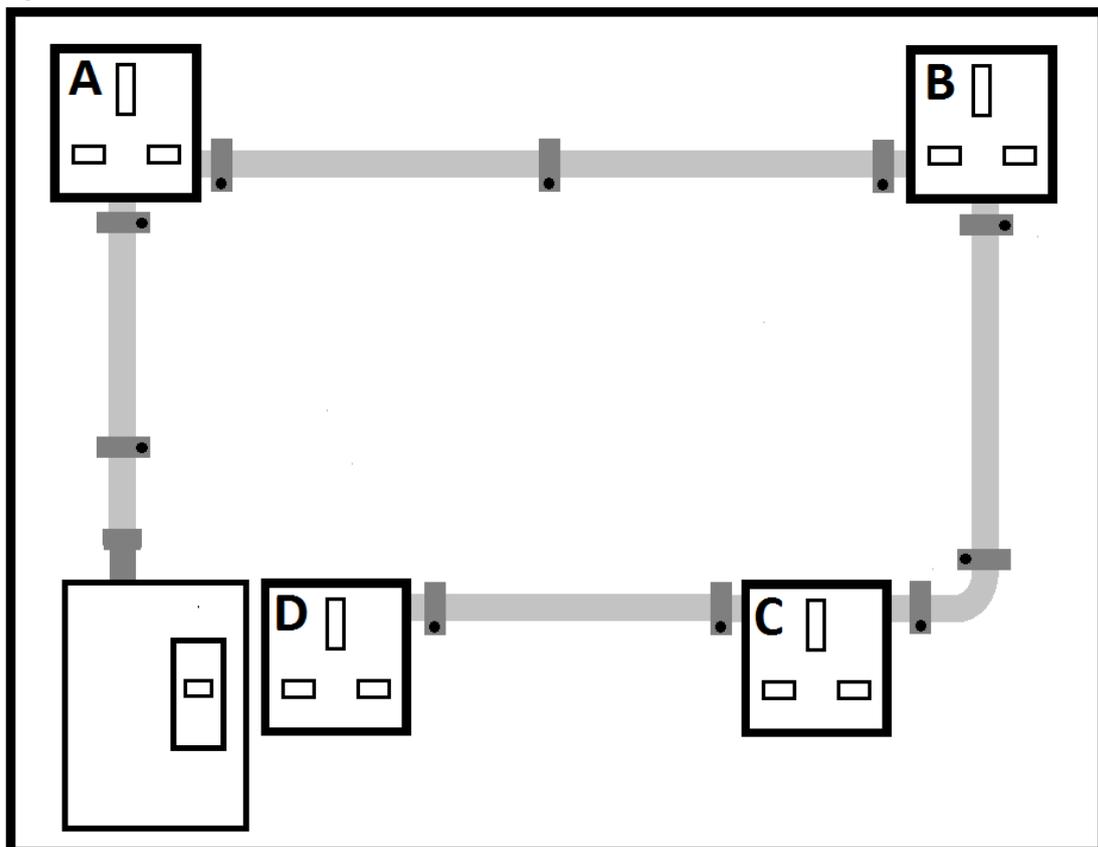
Learner Name ..... Start Date .....

#### Instruction to Learner

On wooden boards to positions identified by the drawing, layout and fix four surface socket boxes and one two way 45 amp consumer unit. Then surface clip and wire in flat profile thermoplastic PVC 2.5 mm<sup>2</sup> twin and CPC cables in the form of an A3 radial circuit from A to D.

The following test must be carried out

- A) Continuity of CPC and Polarity
- B) Insulation resistance





## Practical Job 7

### PVC/PVC Flat Profile Wiring 3 (Simple Socket Circuit 'A3')

| Marking Criteria                          | A3 Radial |
|---|-----------|
| Job carried out in a safe manner          |           |
| All accessories undamaged and assembled   |           |
| Acceptable insulation removed             |           |
| Correct termination of conductors         |           |
| Acceptable amount of spare at termination |           |
| Terminations tight                        |           |
| Terminations doubled over                 |           |
| Cables clipped straight and flat          |           |
| Acceptable clipped distance               |           |
| Acceptable bending radius                 |           |
| Circuit functional                        |           |
| Circuit test results completed            |           |
| Correct torque settings                   |           |
| Worked safely                             |           |
| Work area tidy                            |           |

Assessor ..... Date .....

## Practical Job 8

### PVC/PVC Flat Profile Wiring 4 (Simple Socket Circuit 'A1')

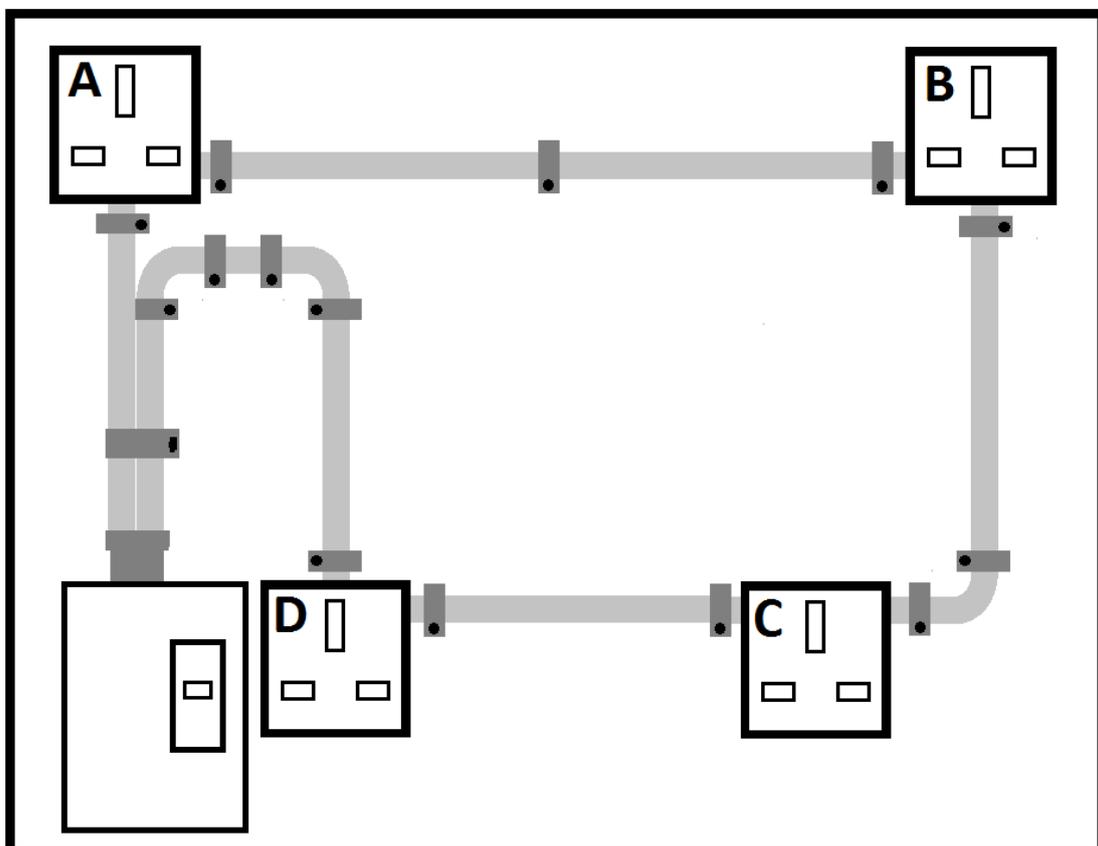
Learner Name ..... Start Date .....

#### Instruction to Learner

Next convert your A3 radial circuit into an A1 ring final circuit as identified by the drawing using flat profile thermoplastic PVC 2.5 mm<sup>2</sup> twin and CPC cable. Remember the cable gland in the top of the consumer unit will need changing.

The following test must be carried out

- A) Continuity of CPC
- B) Continuity of ring final circuit and polarity
- C) Insulation resistance



## Testing Sheet

### PVC/PVC Flat Profile Wiring 4 (Simple Socket Circuit 'A1')

#### Test Results

| Circuit description | Fuse size and type | Cable size mm <sup>2</sup> |     | Ring Final Circuit Continuity Ω |                |    | Continuity Ω<br>R1+R2 | Insulation resistance M Ω |     |     | Polarity<br>✓ |
|---------------------|--------------------|----------------------------|-----|---------------------------------|----------------|----|-----------------------|---------------------------|-----|-----|---------------|
|                     |                    | Live                       | CPC | r1                              | r <sub>n</sub> | r2 |                       | L/N                       | L/E | N/E |               |
|                     |                    |                            |     |                                 |                |    |                       |                           |     |     |               |
|                     |                    |                            |     |                                 |                |    |                       |                           |     |     |               |

$$R_1 + R_n = \frac{\text{End to end line } r_1 + \text{End to end neutral } r_n}{4}$$

$$R_1 + R_2 = \frac{\text{End to end line } r_1 + \text{End to end c.p.c } r_2}{4}$$

## Practical Job 8

### PVC/PVC Flat Profile Wiring 4 (Simple Socket Circuit 'A1')

| Marking Criteria                          | A1 Ring Final Circuit |
|---|-----------------------|
| Job carried out in a safe manner          |                       |
| All accessories undamaged and assembled   |                       |
| Acceptable insulation removed             |                       |
| Correct termination of conductors         |                       |
| Acceptable amount of spare at termination |                       |
| Terminations tight                        |                       |
| Terminations doubled over                 |                       |
| Cables clipped straight and flat          |                       |
| Acceptable clipped distance               |                       |
| Acceptable bending radius                 |                       |
| Circuit functional                        |                       |
| Circuit test results completed            |                       |
| Correct torque settings                   |                       |
| Worked safely                             |                       |
| Work area tidy                            |                       |

Assessor ..... Date .....

# COMMON TOOLS

Tape Measure (5m Steel)  
Posidrive Screwdriver  
Junior Hacksaw  
Bradawl  
Terminal Screwdriver  
Cross Pein Hammer  
2.5lb Lump Hammer  
Bolster Chisel  
Stripping Knife  
Pliers  
Side Cutters  
Medium Flat Tip Screwdriver  
Hacksaw min 24TPI  
Engineers File  
45x45x100mm Wooden Block  
Set HSS Drill Bits (sizes 3mm, 6mm, 10mm)  
Engineers Vice  
Centre Punch  
Electric/Cordless Drill (with 110v Transformer & extension cable & safety sign) (or spare battery and charger if cordless)  
Large Flat Tip Screwdriver  
Conduit Bending Machine with 20mm former.  
Reamer/Round File  
20mm Stocks and die  
Cutting compound  
20/25 Bush Spanner  
20/25 Internal Bush Spanner  
Adjustable grips (water pump pliers)  
Conduit Bending Machine (20mm Former)  
20mm Conduit Bending Spring  
Conduit Warming Cloth  
5.5mm Masonry Drill Bit

Draw Through Tape  
Ratchet Crimping Tool Large and Small  
Combination Wire Stripper  
20mm Hole Saw and Mandrill  
Scriber  
Combination Square (set square)  
Adjustable Spanner  
Open Ended Spanners for SWA Gland 20/22 or 21/23  
Long Spirit Level and Short Spirit Level  
20mm Spade Bit  
Mitre Block  
Noga Burr Removal Tool  
RJ45 Crimp Tool  
CAT5 RJ45 Punch Down Impact Network Tool  
Hawk  
Tin Snips  
Trowel  
Float  
Pad Saw  
Emery cloth for removing galvanised finish from trunking  
Wooden Step Ladder or Platform  
Pencil  
PVC Insulation Tape  
Torque Screwdriver  
Pot Wrench  
Joistripper  
MICC Crimping Tool

## **Test Equipment**

Insulation Resistance Tester Set To 500V/1000M $\Omega$

Low Reading Ohm Meter 0-10 $\Omega$  (Continuity Tester)

1 Set of Test Leads, Crocodile Clips and a Link

Test socket adaptor

Plug in Socket Tester

Voltage indicator **to GS 38** and Proving Unit (if require to prove safe isolation)

## **PPE:**

Goggles, Ear Defenders, Hardhat, Steel Toed Footwear,  
Dust Mask, Overalls, Barrier Cream if required.