

Bursting with energy?

SkilleLECTRIC 2011 In-House Skills Competition

General Information

Competition requirements:

- Each potential competitor should complete the competition task.
- The college tutor should mark the work of each competitor according to the marking scheme overleaf.
- The competitor with the highest score should be entered into SkilleLECTRIC.

We recommend that this test should take approximately 4–6 hours to complete

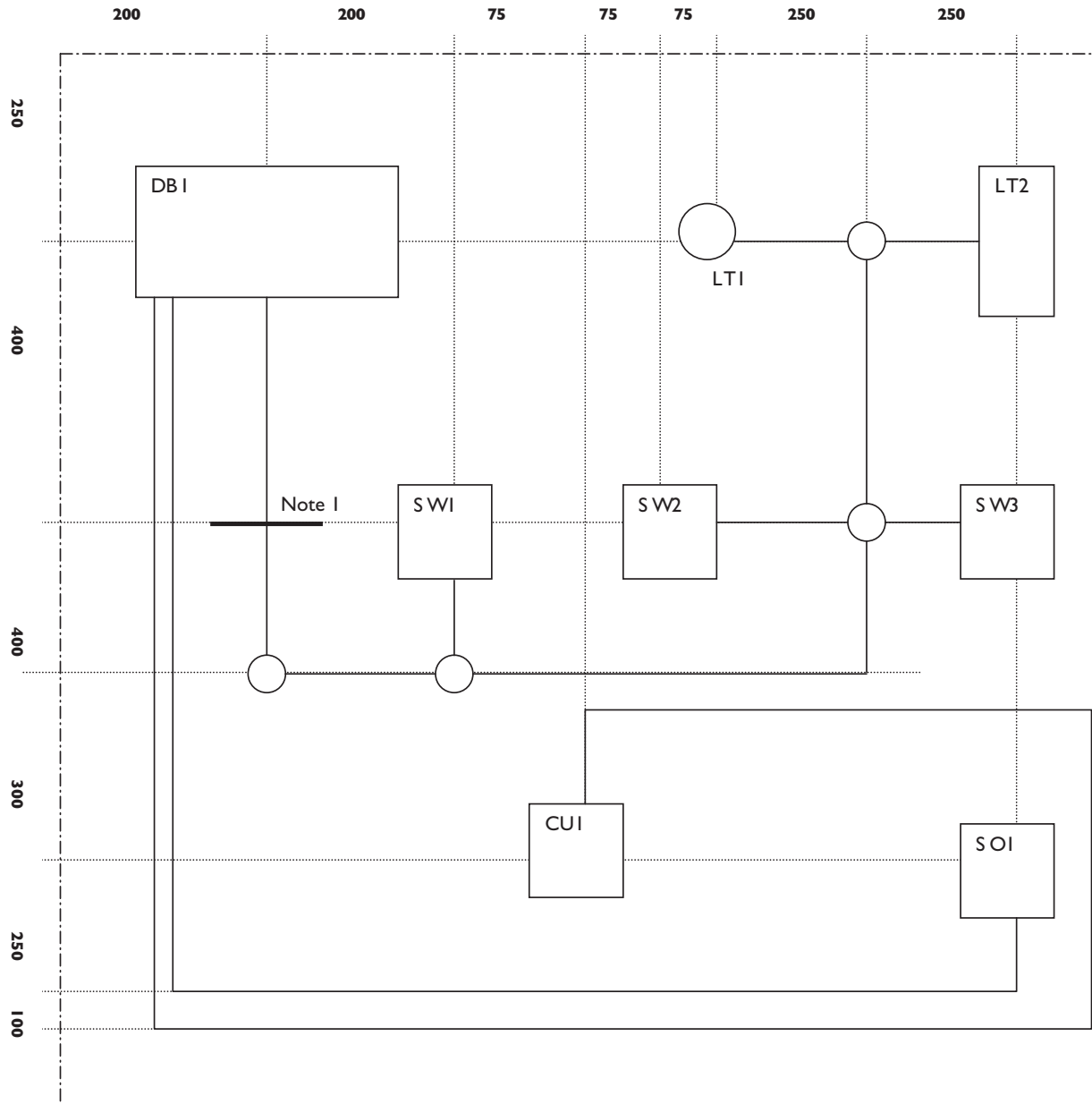
Safe Working

- Candidates must work safely at all times and take the appropriate precautions when working with any tools that have a potential safety hazard.
- Eye and foot protection to be worn at all times.
- No power tools to be used with the exception of a battery powered drill.

The exercise consists of 3 circuits.

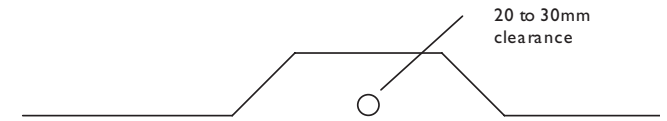
- Circuit 1. A lighting circuit wired in single insulated cable enclosed in PVC conduit.
- The circuit is to control 2 light points via two-way intermediate switching (SW 1, 2 and 3).
- Circuit 2. A 13A metal clad switched socket outlet wired in 2core SWA cable.
- Circuit 3. A switch fused connection unit wired in PVC/PVC insulated cable.

This competition specification was devised by the WorldSkills UK expert electrical installation training manager.



Note 1:

The PVC conduit must bridge a fixed obstruction (20mm PVC conduit illustrated in the diagram by a bold black line) using a double set with a minimum clearance of 20mm and a maximum clearance of 30mm.



Key

- DBI Distribution board/ Consumer unit
- LT1 BC Baton Holder with lamp
- LT2 Bulkhead light fitting with ES lamp holder and lamp
- SW1 1 Gang 2 Way light switch
- SW2 1 Gang intermediate light switch
- SW3 1 Gang 2 Way light switch
- CUI Switch fused connection unit
- SOI Metal clad switch socket outlet
- - - Datum line

Marking Schedule

College / Training Provider:

Assessor's Name and Signature:

Competitor's Name:

Final Score (100 max):

Safety	Mark
Marking criteria (possible mark shown in brackets)	
Personal protective equipment used at all times when cutting materials, using power tools and working overhead (3)	
Work area kept free from hazards at all times (3)	
Safe working practiced used when livening up work after inspection and test (2)	
No faults or dangers found when work tested (2)	
Total (Max 10)	

Inspection and testing	Mark
Marking criteria (possible mark shown in brackets)	
Each circuit inspected and tested and the results recorded: Continuity of cpc (1 mark for each circuit)	
Insulation resistance (greater than 1 M ohm) (1 mark for each circuit)	
Polarity (1 mark for each circuit)	
Single pole switches in Line conductor only for lighting circuit (1)	
Total (Max 10)	

Function	Mark
Marking criteria (possible mark shown in brackets)	
Two way intermediate switching operates correctly (first attempt 6 marks or second attempt 2 marks)	
Both light fittings operate together (first attempt 3 marks or second attempt 1 mark)	
Switch fuse connection unit functions correctly (first attempt 3 marks or second attempt 1 mark)	
Socket outlet functions correctly (first attempt 3 marks or second attempt 1 mark)	
Circuit protective device operates correct circuit (1 mark for each circuit)	
No fault on full installation (2)	
Total (Max 20)	

Installation quality	Mark
Marking criteria (possible mark shown in brackets)	
PVC conduit installation complete with all lids correctly in place (2)	
PVC conduit from DB1 vertical (1)	
PVC conduit bridge over obstruction between 20 and 30mm clearance (2)	
PVC conduit under SW2 horizontal (1)	
PVC conduit to LT1 vertically (1)	
PVC conduit to SW3 horizontal (1)	
PVC conduit bend radius at least 6 times external conduit diameter (2)	
PVC/PVC cable from DB1 securely clipped vertically (1)	
PVC/PVC cable above SO1 securely clipped vertically (1)	
PVC/PVC cable installed without damage to insulation (1)	
PVC/PVC cable bend radius at least 3 times cable diameter (2)	
SWA cable at bottom of board clipped horizontally (1)	
SWA cable from DB1 clipped evenly adjacent to PVC/PVC cable (1)	
SWA cable bend radius at least 3 times cable diameter (2)	
SWA and PVC cable at bottom of board clipped at 100mm centres (1)	
Total (Max 20)	

Positioning of equipment	Mark
Marking criteria (possible mark shown in brackets)	
All measurements taken from datum line with a tolerance of +/- 2mm	
DB1 level and centred horizontally (1)	
DB1 level and centred vertically (1)	
LT1 level and centred horizontally (1)	
LT1 level and centred vertically (1)	
LT2 level and centred horizontally (1)	
LT2 level and centred vertically (1)	
SW1 level and centred horizontally (1)	
SW1 level and centred vertically (1)	
SW2 level and centred horizontally (1)	
SW2 level and centred vertically (1)	
SW3 level and centred horizontally (1)	
SW3 level and centred vertically (1)	
CUI level and centred horizontally (1)	
CUI level and centred vertically (1)	
SO1 level and centred horizontally (1)	
SO1 level and centred vertically (1)	
SW1, SW2 and SW3 all centred horizontally in line (2)	
LT2, SW3 and SO1 all centred vertically in line (2)	
Total (Max 20)	

Wiring and termination	Mark
Marking criteria (possible mark shown in brackets)	
Conductors securely terminated with no bare conductor showing at all terminations when viewed at 90 degrees:	
DB1 (1)	
SW1 (1)	
SW2 (1)	
SW3 (1)	
LT1 (1)	
LT2 (1)	
CUI (1)	
SO1 (1)	
SWA Gland terminated correctly with protective conductor continuity assured (2 marks for each termination)	
Correct cable identification on all conductors for lighting circuit (3)	
Correct cable identification on all conductors for CUI (1)	
Correct cable identification on all conductors for SO1 (1)	
Correct circuit identification at DB1 for each circuit protective device (1 mark for each circuit)	
Total (Max 20)	