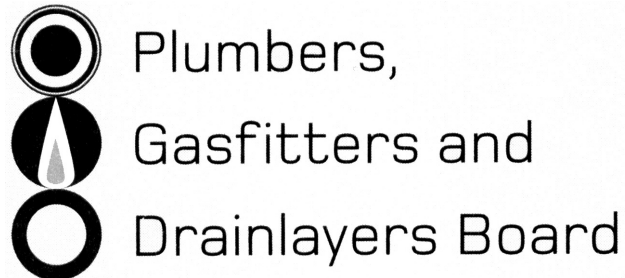


No. 9192



REGISTRATION EXAMINATION, JUNE 2012
LICENSED PLUMBER

ANSWER SCHEDULE

ANSWER 1

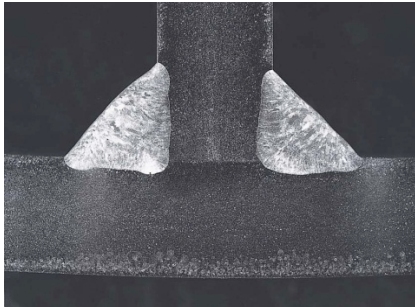
- (a) (i) Any FOUR (½ mark each)
- Fire.
 - UV radiation – Skin.
 - UV radiation – Arc eye.
 - Asphyxiation – suffocation.
 - Inhaling toxic fumes.
 - Hot metal burns.
 - Tripping on leads.
 - Crush injuries from heavy objects.
 - Electric shock.

(2 marks)

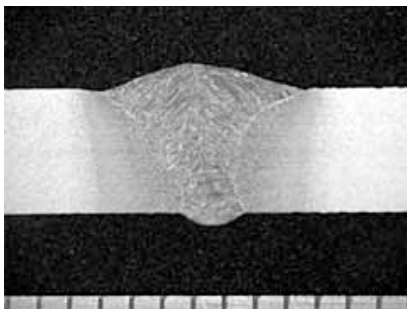
- (ii) Any SIX (½ mark each)
- Leather Gloves – Gauntlets.
 - Safety Glasses.
 - Full cover cotton overalls.
 - Sturdy leather boots.
 - Leather apron/jacket.
 - Welding helmet.

(3 marks)

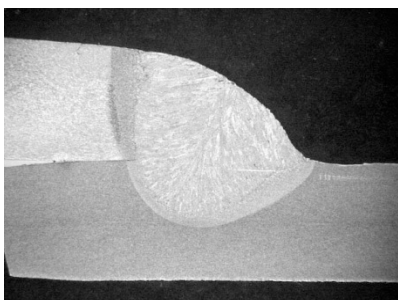
- (iii) (i)



- (ii)



- (iii)



(3 marks)

- (b) (i) Any TWO: (½ mark each)
Toxic fumes.
Flammable fumes.
Dust.
Too much oxygen.
Not enough oxygen.
Temperature (body overheating).
Combustion engines. (1 mark)
- (ii) Any TWO (1 mark each)
Have a monitor assessing the air quality regularly.
Ventilate the space.
Use breathing apparatus. (2 marks)
- (c) Any TWO (1 mark each)
Away from heat sources.
Well ventilated.
Not near oxygen cylinders.
On a stable firm base. (2 marks)
- (d) Any FOUR (1 mark each)
Rollers.
Swage and jenny machine.
Crimpers.
Folders/cornice brake/folding pilers.
Seaming tool.
Hammer/mallet.
Centre punch. (4 marks)

Total 18 marks

ANSWER 2

- (a) Correct scale (1 mark)
Diagram is isometric (1 mark)
Correct location of inlet (1 mark)
Correct location of outlet (1 mark)
Diagram correctly labelled (1 mark) (5 marks)
- (b) $(3.2 \times 3.2) + (1.1 \times 1.1) = c^2$ (½ mark)
 $10.24 + 1.21 = c^2$
 $11.45 = c^2$ (½ mark)
 $c = \sqrt{11.45}$ (½ mark)
 $c = 3.38$ (½ mark)
Length = $3.38 + 0.06$ (½ mark)
Length = 3.44 metres (1 mark) (3 marks)
- (c) Area of roof $14 \times 8 = 112 \text{ m}^2$ (1 mark)
Rainfall in hour $112 \times 0.034 = 3.808 \text{ m}^3$
Rainfall in 45 mins $3.808 \times 75\% = 2.856 \text{ m}^3$ (1 mark)
 $2.856 \text{ m}^3 = 2856 \text{ litres}$ (1 mark) (3 marks)

Total 11 marks

ANSWER 3

Any FOUR (½ mark each)

WC cistern inlet.

Dishwasher supply.

Washing Machine supply.

Water heater inlet.

Cold water storage tank inlet.

As required with any backflow device if fitted.

Water heater drain if terminating in the HWC cupboard.

Total 2 marks

ANSWER 4

- (a) Any THREE (1 mark each)
- Humidity.
 - Temperature.
 - Air changes per hour.
 - Air quality – e.g. dust, smell.
 - Intended use of area. (3 marks)
- (b) Any ONE: (1 mark)
- No drafts.
 - Dust and smells etc are pushed out of the building.
 - Can control humidity within the building. (1 mark)
- (c) Any TWO (1 mark each)
- Return air grill/filter blocked.
 - Room registers have been closed.
 - Ducting has split.
 - Ducting is crushed. (2 marks)
- Total 6 marks**

ANSWER 5

- (a) Any THREE (1 mark each)
- Low pressure.
 - Open vented.
 - Indirect/indirectly heated – (Wetback/solar ½ mark).
 - Storage. (3 marks)
- (b) 45 litres (1 mark)
- Total 4 marks**

ANSWER 6

(a) $400 \div 9.81 = 40.77$ metres. (1 mark)

(b) Any TWO (1 mark each)

The wear on the seals or impellers/vanes of the pump.

The atmospheric pressure at the installation site.

The flow rate required at the outlet.

Variable suction head/lift.

(2 marks)

Total 3 marks

ANSWER 7

(a) (i) A toilet suite where the cistern outlet sits directly over the water inlet for the WC pan – no flush pipe.

(1 mark)

(ii) The distance from the finished wall level to the centre of the pan outlet.

The location of the water inlet for the cistern – height from floor and distance from centre.

The height from finished floor level for any required fixings.

(3 marks)

(iii) Any ONE (1 mark)

As the suite is fully constructed from vitreous china it is fragile and susceptible to damage from stress if components do not line up properly.

There is no adjustment available in the installation (i.e. length or height of flush pipe if measurements are out).

A space is sometimes provided through the rear of the cistern for the water isolating valve.

Total 5 marks

ANSWER 8

Any FOUR (½ mark each)

Spindle o ring is in good condition – stuffing box is sealed.

Spindle thread is not worn or cracked.

Spindle is lubricated.

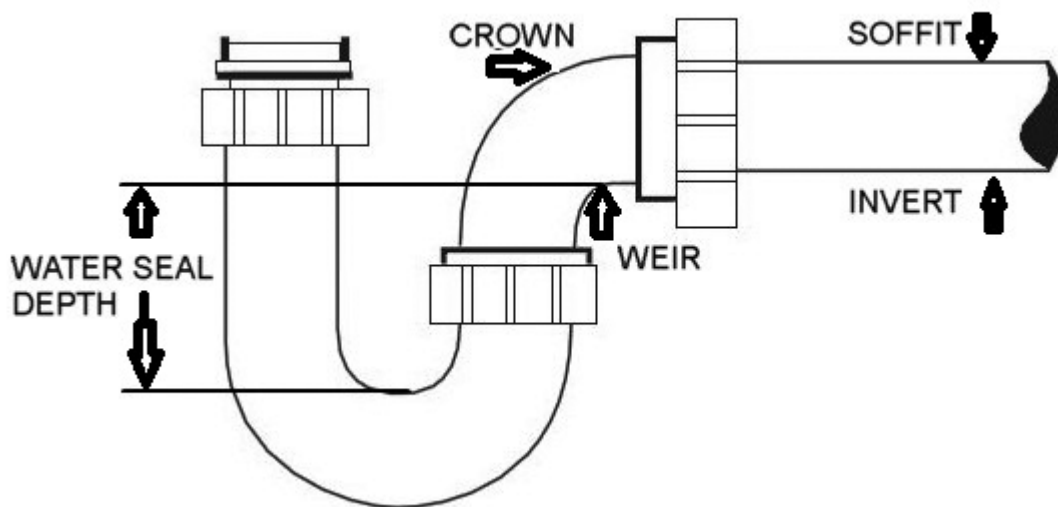
Washer is in good condition.

Seat is not damaged.

Tap is securely mounted.

Total 2 marks

ANSWER 9



(1 mark each correct label)

Total 5 marks

ANSWER 10

- (a) Any FOUR (½ mark each)
- Suitable for the temperatures in the system.
 - Suitable for the pressures in the system.
 - Compatible with the water supply.
 - Compatible with the environmental conditions.
 - Resistant to UV if installed in exposed location. (2 marks)
- (b) (½ mark each)
- There must be electricity provided in the building.
 - The water pipe must be metallic.
 - Building users are able to make contact with exposed parts of water pipe/taps or connected metallic sanitary fixtures.
 - The metal pipe forms a link from the ground to the building users. (2 marks)
- (c) The liquid inside the pipes can freeze which will cause the water to expand.
This will increase the pressure inside the pipe and may cause the pipe to split. (2 marks)
- (d) Any THREE (1 mark)
- Relief valve drains cannot be combined.
 - Relief valve drains shall have a tundish with 25 mm air break.
 - Relief valve drains from tundish shall be one size larger than relief valve outlet.
 - Maximum of 100 mm pipe on outlet of relief valve before tundish.
 - Vent pipe insulated to at least 300 mm above standing water level.
 - Cold water expansion valve fitted on open vented systems if freezing likely to be for more than 24 hours. (3 marks)

Total 9 marks

ANSWER 11

Any SIX (½ mark each)

UV resistant.

Non-corrosive/Neutral cure.

Flexible.

Water resistant.

Heat and Cold resistant.

Non-slumping.

Adhesive to flashing materials used.

Total 3 marks

ANSWER 12

(a)

	Definition	Example
Sanitary fixture	A fixture used for sanitation	Basin, shower etc
Soil fixture	A fixture used to dispose of excreted human waste	Toilet, slop sink etc
Sanitary appliance	A appliance used for sanitation	Dishwasher Washing machine

(6 marks)

(b) Any TWO (1 mark each)

Prevent oscillation – wind eddies entering vent pipe.

Prevent smell/pollution of habited spaces.

Prevent waste over flowing at vent terminal.

(2 marks)

(c) Drawing shows:

A water trap.

(1 mark)

The clothes washing machine discharge pipe connecting to the laundry waste pipe at correct place.

(1 mark)

Minimum diameter.

(1 mark)

Waste outlet at acceptable level to gully dish lid.

(1 mark)

Note: No tap = no marks.

(4 marks)

Total 12 marks

SECTION B

- 1 C The ability for a material to return to its original shape after being stretched.
- 2 A The ability for a material to deform permanently under compression without rupturing.
- 3 E The ability for a material to be stretched without breaking.
- 4 B Polypropylene.
- 5 C Solvent cement welding.
- 6 A MJ.
- 7 B An air lock can occur.
- 8 A To prevent the dishwasher from syphoning.
- 9 D Non return valve.
- 10 A Cold water expansion valve.
- 11 B To maintain protection and an uninterrupted water supply during servicing.
- 12 D Temperature pressure relief valve.
- 13 E Above ground level.
- 14 A An in lawn sprinkler system.
- 15 E Reduces the chance of calcium deposits fouling a temperature pressure relief valve.
- 16 C Pressure type vacuum breaker.
- 17 B A school.
- 18 D 600 mm.
- 19 C 400 mm.
- 20 B 750 mm.

Total 20 marks