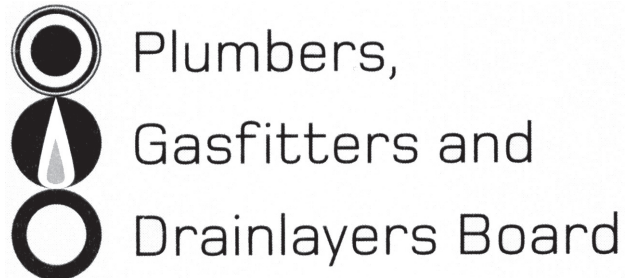


No. 9192



REGISTRATION EXAMINATION, NOVEMBER 2014
LICENSED PLUMBER

ANSWER SCHEDULE

ANSWER 1

	Name of equipment	Unit of measurement
Water Pressure	Bourdon gauge	Pascal OR kPa
Relative Humidity	Psychrometer OR hygrometer	Percent %
Gradient	Level (Builders, laser, dumpy, spirit)	Ratio OR percent %

Total 3 marks

ANSWER 2

- (a) (i) Both sinks waste disposal discharge via a trap.
(ii) Waste pipe outlets located at least 20 mm above water seal level, and at least 20 mm below the grating.
(iii) 40 mm. (4 marks)

- (b) • To allow organic matter to dry out.
• To allow foul air to escape.
• To prevent compression.
• To prevent siphonage. (½ mark each)
Note: Prevent loss of seal (1 mark). (2 marks)

- (c) • To allow gases to rise to the terminal.
• To allow liquid (rain, condensation and foul water) in the vent pipe to run down to the waste system (to prevent water traps forming). (1 mark each, 2 marks)

Total 8 marks

ANSWER 3

- (a) Correct scale. (1 mark)
Diagram is three-dimensional. (1 mark)
Correct location of inlet. (1 mark)
Correct location of outlet. (1 mark)
Diagram correctly labelled. (1 mark)
(5 marks)

- (b) $1.5 \times 1.7 \times 2 = 5.1$
 $2.1 \times 1.7 \times 2 = 7.14$
 $1.5 \times 2.1 = 3.15$
 $5.1 + 7.14 + 3.15 = 15.39 \text{ m}^2$ (3 marks)

- (c) $1.5 \times 2.1 \times 1.7 = 5.355 \text{ m}^3$ (1 mark)

Total 9 marks

ANSWER 4

- (a) Any SIX (½ mark each)
- Remove the open vent pipe work.
 - Install a relief valve drain.
 - Install a tempering valve.
 - Install seismic restraints.
 - Replace pressure reducing valve or ceiling tank with pressure limiting valve.
 - Install a cold water expansion valve.
 - Install a TPR valve. (3 marks)
- (b)
- A Untempered hot supply.
 - B Tempered water supply.
 - C Tempering valve.
 - D Pressure relief valve.
 - E Tundish.
 - F Isolating valve.
 - G Filter.
 - H Pressure reducing valve.
 - J Non-return valve.
 - K Cold water expansion valve. (½ mark each, 5 marks)

Total 8 marks

ANSWER 5

- (a) EITHER
The clearest/cleanest water possible is drawn off to the pump at all times.
OR
Floating debris on the surface is less likely to enter the delivery pipe. (1 mark)
- (b) To stop a siphon being created when the tank overflows. (1 mark)
- (c) The aged/stagnant water and sediment is more likely discharged when tank overflows. (1 mark)
- (d) Position at inlet of pipe near the float indicated OR at outlet of tank. (1 mark)
- (e) Keeps water within the pipe draining out requiring the pump to be re-primed (1 mark)
- (f) Length of pipework
Diameter of pipework
Fitting and valve restrictions
Pipe material (½ mark each, 2 marks)

Total 7 marks

ANSWER 6

Carry out testing before concealing pipework behind interior linings, flooring, under or within concrete and before backfilling trenches.

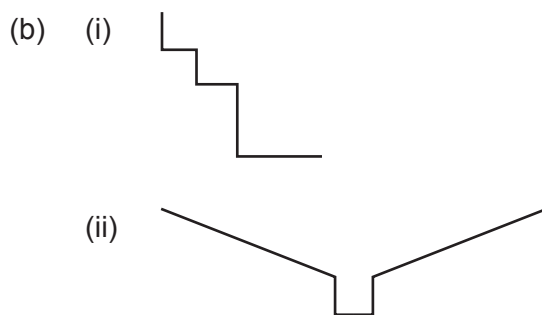
Isolate all fixtures, appliances, water tanks and other equipment which may be damaged during testing. Subject the pipework or system to a minimum test pressure of 1500 kPa for a period of not less than 15 minutes.

Inspect the system to ensure there are no leaks.

Total 4 marks

ANSWER 7

- (a) D Back fill a level even with the bottom of the walings.
B Compact soil.
E Remove the struts.
A Remove the walings.
F Remove the props.
C Remove poling boards/sheeting.



- (iii) Any TWO (1 mark each)
- Soil type.
 - Water table height.
 - Depth of trench.

Total 3 marks

ANSWER 8

- (a) 31 March (1 mark)
- (b) Any THREE, 1 mark each
- Work under the supervision of a certifying plumber.
 - Have the appropriate number of CPD points.
 - Complete the re-licensing form.
 - Pay the licence fee.
- (3 marks)

Total 4 marks

ANSWER 9

(a) Any TWO, 1 mark each

- Install vent pipework.
- Run individual fixture discharge pipes.
- Increase diameter of common discharge pipe.

(b) Any THREE, 1 mark each

- Relief valve drain discharging to FWG via tundish.
- Small bore pipe attached to the flush pipe of a WC to divert quantity of flushing water to the FWG each time WC is flushed.
- Have a waste water fixture discharging into FWG.
- Regularly fill FWG from hose tap or similar.

(3 marks)

(c) A piece of matter (hair, string etc) is caught on the weir of a trap.

Water is wicked up the end of the fibre that is in the water, the water then travels along the fibre and over the weir of the trap where it then drips into the fixture discharge pipe and drains to the outfall.

(2 marks)

Total 7 marks

ANSWER 10

Installation checks	Proposed changes	Reason for improvement
Shower head model – single or multi-function	Change to single function	Less pressure and flow loss due to friction
Shower hose – small bore or wide bore	Change to wide bore	Less pressure and flow loss due to friction
Height of vent pipe	Increase height of vent pipe and adjust pressure reducing valve	Increase hot water pressure
Possibility of installing a pressure relief valve	Install pressure relief valve and adjust pressure reducing valve	Increase hot water pressure

(1 mark)

(½ mark)

(½ mark)

(Any THREE lines)

Total 6 marks

ANSWER 11

- (a) Isolate PRV from system.
Remove washer housing cap.
Remove washer cup rod.
Remove washer cup.
Replace washer.
Re-assemble and turn water back on. (½ mark each, 3 marks)
- (b) Any THREE, 1 mark each
- Spring for setting level may need re-adjusting.
 - Cylinder thermostat not shutting off and water is boiling over.
 - The seat in the pressure reducing valve is damaged.
 - Back pressure of mains pressure cold water through a mixing valve. (3 marks)

Total 6 marks

ANSWER 12

- (a) Water that has been used for sanitation but does not include any human waste (e.g. Baths, showers, laundry) or waste water. (1 mark)
- (b) Water that contains human waste. (1 mark)
- (c) Clean drinking quality water. (1 mark)
- (d) Water (from rain or from a pond or river) that flows over the earth's surface. (1 mark)

Total 4 marks

ANSWER 13

- (a) Testable double check valve. (1 mark)
- (b) A Test points.
B Seat.
C Spring.
D Inlet. (4 marks)
- (c) Medium hazard. (1 mark)

Total 6 marks

ANSWER 14

- (a) Any FOUR, 1 mark each
- 300 mm from the front of the WC pan.
 - 800 – 850 mm above floor height to top of basin.
 - More than 675 mm above floor to bottom of basin.
 - Shroud fitted to protect pipework 200 – 300 mm above floor.
 - Basin can protrude maximum of 400 mm into the room. (4 marks)
- (b) 450 mm. (1 mark)
- Total 5 marks**

ANSWER 15

- (a) Ball valve (1 mark)
- (b) Gate valve (1 mark)
- (c) Stop tap (1 mark)
- (d) Float valve/ball cock (1 mark)
- Total 4 marks**

SECTION B

1. E Gutter.
2. D 600 mm.
3. A 2 minutes.
4. B A system where the water is circulated by a pump.
5. C 45°C.
6. D 86 mm.
7. C 10°
8. B 250 mm.
9. E 110 mm.
10. E Heat that is circulated through air or liquid due to differing densities.
11. B Heat that can travel through a vacuum.
12. A Heat that is transferred molecule to molecule by direct contact.

Total 12 marks