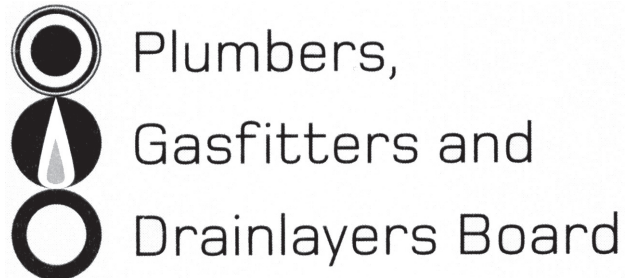


No. 9192



REGISTRATION EXAMINATION, JUNE 2014
LICENSED PLUMBER

ANSWER SCHEDULE

ANSWER 1

(a) Any FOUR (1 mark each)

- Cuts from metal.
- Fall from roof.
- Ladder or roof access slipping.
- Dropping tools off the roof.
- Weather (sunburn, rain making it slippery).
- Power lines.

(4 marks)

(b) Minimise – wear appropriate PPE (ie earmuffs).

Isolate – enclose the noisy machinery in a room to prevent sound reaching workers.

Eliminate – Replace the machine with a quieter model.

(3 marks)

Total 7 marks

ANSWER 2

Fitting	Number required
Copper brazing tees	5
Brass brazing bracket elbows (wingbacks)	7 (4 + 2 for shower roses +1 for CFWH)
Crox nuts	4
Polybutylene tees	9
Polybutylene bracket elbows (wingbacks)	8

Total 5 marks

ANSWER 3

(a) To relieve pressure in a hot water cylinder due to thermal expansion.

(1 mark)

(b) Between the non-return valve and the inlet to a hot water cylinder.

(1 mark)

(c) 25 mm

(1 mark)

(d) Copper.

(1 mark)

Total 4 marks

ANSWER 4

- (a) Flashing and laps correct sizes. (3 marks)
Penetration hole correct size and location. (2 marks)
Correct scale. (1 mark)
- (6 marks)
- (b) Any THREE (1 mark each)
- Wind speed of area.
 - Size of penetration.
 - Width of roofing profile.
 - Distance to ridge.
- (3 marks)
- Total 9 marks**

ANSWER 5

- (a) (i) Install the trap closer to the fixture outlet. Install a fixture with a flatter slope to the outlet. (2 marks)
- (ii) Move the terminal of the vent pipe to a more sheltered position. (2 marks)
- (iii) Run the waste pipes separately. Install vent pipes to relieve pressure between the two fixtures. (2 marks)
- (b) Any THREE (1 mark each)
- Self siphonage.
 - Induced siphonage.
 - Leak.
 - Capillary attraction.
 - Evaporation.
- (3 marks)
- Total 9 marks**

ANSWER 6

- (a) 2 (1 mark)
- (b) 32 mm (1 mark)
- (c) Points indicated at 75 mm and 3.5 m from crown of the traps. (2 marks)

Total 4 marks

ANSWER 7

- (a) (i) The layering of water within a cylinder due to different densities at different temperatures. (1 mark)
- (ii) The expected maximum draw off (litres/s at a given temperature) from the system when it is at its highest demand. (1 mark)
- (iii) A heat source that cannot be turned off once the required temperature has been reached eg, solar, wetback (fire). (1 mark)
- (iv) A heating system which is designed to provide hot water at the outlet of a cylinder as quickly as possible. (1 mark)
- (v) A heating system which incorporates a heat exchanger to prevent two liquids mixing. (1 mark)
- (b) (i) Diameter = $540 - 30 = 510$ mm (1 mark)
- (ii) $H = V \div A$
 $= 180 \div \pi r^2$ (2 marks)
 $= 180 \div (3.142 \times 0.255^2)$
 $= 881.06$ mm (1 mark)
- (c) When any leaks from the cylinder could cause damage to another dwelling in the property. (1 mark)

Total 10 marks

ANSWER 8

(a) Any FOUR (½ mark each)

- No water trap.
- Discharge to open air within property boundary.
- Discharge in a safe location.
- Be fitted with a means to prevent birds or vermin entering the discharge pipe.
- Be fitted with a removable grating flush with the floor.

(2 marks)

(b) • A foul water drain.
• A discharge stack.

(2 marks)

Total 4 marks

ANSWER 9

(a) Any FOUR (1 mark each)

- Pressure switch.
- Float switch.
- Electronic flow controller.
- Thermostat.
- Timer.
- Thermal cut out.
- Conductivity probes.
- Ultrasonic level or flow switch.

(4 marks)

(b) • Evens out pressure fluctuations.
• Reduces number of times pump has to come on/off.

(2 marks)

(c) Downstream of the pump.

(1 mark)

Total 7 marks

ANSWER 10

Arrows and label to show correct heat transfer types for point indicated, eg:

- Convection currents with storage cylinder.
- Radiant heat waves to the solar panels.
- Conduction transfer on coil to water in storage cylinder and off radiators.

Total 6 marks

ANSWER 11

Cross-sectional diagram.

Drawing to show:

Coil

Spring

Plunger and seat

Power supply

Total 5 marks

ANSWER 12

- (a) (i) Any condition, device or practice which, in connection with the potable water supply system, would constitute a nuisance, by colour, odour or taste, but not injure or endanger health.
- (ii) Any condition, device or practice which, in connection with the potable water supply system, has the potential to injure or endanger health.
- (iii) Any condition, device or practice which, in connection with the potable water supply system, has the potential to cause death.

(3 marks)

- (b) $2 \times$ the diameter or 25 mm whichever is the greater.

(2 marks)

Total 5 marks

ANSWER 13

Pipe material	Joining Method
Polypropylene	Electro-fusion, compression
Polybutylene	Crimp fitting
Cross Linked Polyethylene	Crimp fittings, sliding sleeve
Unplasticised polyvinyl chloride	Solvent cement, compression
High density polyethylene	Compression, electrofusion

Total 5 marks

ANSWER 14

- (a)
- Isolation.
 - Non-return.
 - Cold water expansion.
 - Pressure limiting.
 - Tempering.
 - Temperature Pressure Relief.
- (½ mark each), (3 marks)
- (b) The shower outlet.
The water level height in the vent pipe.
- (2 marks)

Total 5 marks

SECTION B

1. C 3.0 m.
2. E 100 mm.
3. C 1.800 m.
4. A 20 mm.
5. A The connection point must be at least 50 mm above the overflow level of the fixture.
6. C A vent that is connected to a discharge pipe before the last fixture.
7. C A macerating pump
8. D Waste water from a basin or laundry
9. A 1
10. C 1.65%
11. A 25 mm
12. B On the return line
13. E A UV filter
14. D 800
15. C 20

Total 15 marks