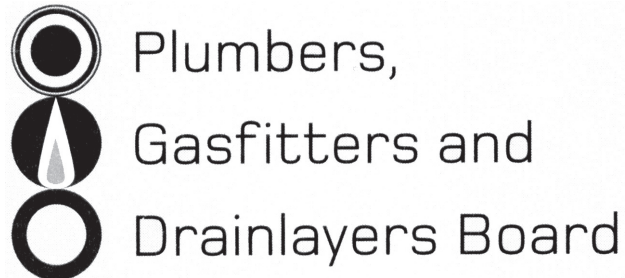


No. 9192



REGISTRATION EXAMINATION, NOVEMBER 2017
TRADESMAN PLUMBER

ANSWER SCHEDULE

ANSWER 1

(a) **Floor waste**

A floor waste may or may not be trapped. It does not receive waste from sanitary fixtures.

(2 marks)

(b) **Floor waste gully**

A floor waste gully has a trap. It will discharge directly into the foul water system.

Fixtures may discharge into a floor waste gully.

(2 marks)

Total 4 marks

ANSWER 2

(a) Network utility operator.

Rainfall.

Bore/aquifer/spring.

Tanker.

(½ mark each, 2 marks)

(b) Any FOUR (½ mark each)

Have a vermin proof lid on the tank.

Ensure there are no cracks in the tank.

Use a tank that is impermeable to sunlight.

Fit a backflow prevention device to prevent backflow from fixtures fed from the tank.

Install a UV filter on the outlet of the tank.

Keep the temperature of the tank cool – bury in ground or install on shaded side of house.

Locate the inlet to minimise turbulence.

(2 marks)

(c) (i) Any FOUR (1 mark each)

Diaphragm pump.

Gear pump.

Reciprocating pump.

Rotary pump.

Hydraulic ram.

Mono pump (helical screw).

(4 marks)

(ii) A measured amount of liquid is moved with each stroke or rotation of the pump.

(1 mark)

(d) Centrifugal pump.

(1 mark)

Total 10 marks

ANSWER 3

(a) Any FOUR (1 mark each)

Raise the ceiling tank.

Remove the ceiling tank and fit a pressure reducing valve, and ensure open vent through roof.

Remove the ceiling tank and fit pressure reducing valve and fit pressure relief valve to cylinder.

Remove the tank and replace low pressure cylinder with mains pressure cylinder and required valves.

Lower the shower rose outlet.

Install a Venturi type shower mixer.

(4 marks)

(b) Any FOUR (1 mark each)

Change the shower head.

Install larger diameter or smoother walled pipe.

Install pipework with less or large radius bends.

Check and remove any blockages in the filters.

Change the shower mixer for less restrictive model.

(4 marks)

(c) **Cause:**

When the tap is turned on the pressure and flow to the shower drops. Water is diverted away from the shower to the tap outlet.

(1 mark)

Remedy:

Any ONE (1 mark)

Install a priority feed to the shower (run a larger diameter pipe directly to the shower mixer).

Install a pressure limiting valve.

(1 mark)

Total 10 marks

ANSWER 4

Temp diff = $70 - 9 = 61^{\circ}\text{C}$ (1 mark)

Heat energy input = $(3 \times 2) \times 3.6 \times 1000 = 21\,600 \text{ kJ}$ (1 mark)

Heating time = $\frac{300 \times 4.2 \times 61 \times 100}{21600 \times 95}$ (1 mark)

$$= \frac{7686\,000}{2052\,000}$$

= 3.746 hours (1 mark)

= 3 hours 45 minutes (1 mark)

Time to turn on 3:00 pm – 3 hours 45 mins = 11:15 am (1 mark)

Total 6 marks

ANSWER 5

(a) Any TWO (1 mark each)
Trainee limited certificate plumber.
Journeyman licenced plumber.
Exemption under supervision plumber. (2 marks)

(b) Any THREE (1 mark)
Complete CPD requirements.
Be supervised by a licensed certifying plumber.
Apply and pay for an annual licence.
Be considered a fit and proper person by the PGDB. (3 marks)

(c) Work defined as sanitary plumbing under the PGD Act. (1 mark)

(d)

Task	Restricted plumbing (tick)	Task	Restricted plumbing (tick)
Changing the washer in a kitchen sink tap.		Replacing a low pressure hot water cylinder	✓
Replacing a toilet suite	✓	Replacing a rubber boot flashing on a vent pipe	
Installing a water supply to an under-bench water filter	✓	Moving a hand basin to another location within a bathroom.	✓

(3 marks)

Total 9 marks

ANSWER 6

- (a) Any TWO (1 mark each)
UV damage.
Physical damage.
Frost. (2 marks)
- (b) Any ONE (1 mark)
Crimping.
Sliding sleeve. (1 mark)
- (c) Any ONE (1 mark)
Directly at the hot outlet of a HWC.
As a drain from a TPR valve or HWC tundish. (1 mark)
- (d) Available in longer lengths (coils) – fewer joints.
Flexible – quicker to install, easier to handle.
Resistant to environmental stress cracking from vibration or temperature fluctuations especially frost. (3 marks)
- (e) Any THREE (1 mark each)
Can be installed outside without UV protection.
Does not require as much support as polybutylene.
Can make tight radius bends without fittings.
Can be directly connected to hot outlet of a HWC.
Can be used for drain from a TPR valve or HWC tundish.
Expands less so less allowance for expansion needed. (3 marks)

Total 10 marks

ANSWER 7

- (a) Drawing to:
- be at correct scale (2 marks)
 - be a pattern (1 mark)
 - show cut lines and fold lines (1 mark)
 - have correct measurements. (2 marks)
- (6 marks)
- (b) Any THREE (1 mark each)
Wind zone.
Distance from ridge to penetration.
Profile of roof material.
Size of penetration. (3 marks)

Total 9 marks

ANSWER 8

- (a) Line drawn in correct place. (3 marks)
- (b) (i) Drinkable – suitable for human consumption. (1 mark)
- (ii) Any ONE (1 mark)
- Hose tap for irrigation.
- Clothes washing machine.
- Toilet cistern.
- Fire fighting supply. (1 mark)
- (iii) Outlet must be clearly marked “Not potable”. (1 mark)
- (c) (i) Layering of water within a cylinder due to different temperatures. (1 mark)
- (ii) A heat source that cannot be adjusted via a thermostat – solar/wetback. (1 mark)
- (iii) A heating system incorporating a heat exchange system. (1 mark)
- (iv) Heat transfer by circulating currents due to differing densities. (1 mark)
- (v) Hot water mixed with cold water to give a safe outlet temperature. (1 mark)

Total 11 marks

ANSWER 9

Answer to show:

- fixture discharge vent connected to relief vent at 50 mm above flood level (2 marks)
- relief vent connected to stack 300 mm below fixture discharge pipe (1 mark)
- fixture vent connected to fixture discharge pipe between 75 mm and 1500 mm of crown of fixture trap (2 marks)
- relief vent correctly terminated. (1 mark)

Total 6 marks

ANSWER 10

- (a) • Chamfer spigot end and remove burrs.
• Lightly roughen end of pipe to give solvent something to bite into.
• Measure and mark depth of socket on pipe.
(1 mark for 2 out of 3 steps)
- Clean both surfaces with appropriate cleaning fluid.
• Apply even coating of appropriate solvent to socket and then spigot.
(1 mark for both steps)
- Push spigot into full depth of socket.
• Remove excess solvent from pipe.
• Do not move pipe for at least five minutes.
(1 mark for 2 out of 3 steps) (3 marks)

- (b) Any FOUR (½ mark each)
 Polypropylene.
 Polyethylene.
 Copper.
 Glass.
 Stainless Steel.
 Cast iron.

(2 marks)

Total 5 marks

ANSWER 11

(a)

Items	Discharge unit rating	Minimum pipe diameter
WC Pan	4	80
Commercial kitchen sink	3	50
Bath	4	40
Wall-hung urinal	1	32
Double laundry tub	5	40
Dishwasher	3	40

(6 marks)

- (b) Installing a vent.
 Running waste pipes separately. (2 marks)
- (c) A piece of debris caught on the weir of the trap allowing water to track between the debris and the internal wall of the trap until it goes over the weir and enters the discharge pipe. (2 marks)

Total 10 marks

SECTION B

- 1 B 25 m.
- 2 C 3.0 m.
- 3 A To prevent trap seal loss due to compression.
- 4 C 1.800 m.
- 5 A 20 mm.
- 6 E 50 mm.
- 7 A 3.5 m.
- 8 C Tundish.
- 9 B A urinal.
- 10 D Oscillation.

Total 10 marks