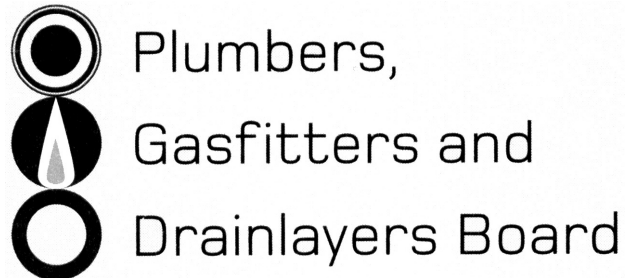


No. 9195



REGISTRATION EXAMINATION, JUNE 2020  
**CERTIFYING PLUMBER**

**ANSWER SCHEDULE**

## ANSWER 1

- Measurement 'X' correct (130 mm). (2 marks)
- Corrugations crossed according to the wind zone (2 crests finish in trough). (1 mark)
- Rubber boot flashing on angle. (1 mark)
- Soaker flashing terminating under ridge flashing or cover sheet (250 mm). (2 marks)
- Fixing of rubber boot flashing to soaker flashing. (1 mark)

**Total 7 marks**

## ANSWER 2

- (a) Potable outlets correct (2 marks)  
Non-potable outlets connecting (2 marks)  
(4 marks)
- (b) EITHER  
Backflow prevention system, correct type (2 marks)  
Float valve at low level or sensors (1 mark)  
OR  
Float valve with long leg (2 marks)  
Overflow showing air gap (1 mark)  
(3 marks)
- (c) • Label near any tap(s) on pipework conveying non-potable water.  
• Coloured tape on pipework (or coloured pipework material) conveying non-potable water.  
(2 marks)

**Total 9 marks**

## ANSWER 3

- (a) (i) Fully vented. (1 mark)  
(ii) Correctly connected. (2 marks)
- (b) (i) Single stack modified. (1 mark)  
(ii) Correctly connected. (2 marks)
- (c) (i) Fully vented modified. (1 mark)  
(ii) Correctly connected. (2 marks)

**Total 9 marks**

#### **ANSWER 4**

(a) Any THREE (1 mark each)

Underground services – Guide for safety with underground services.

Height – Best practice guidelines for working at height in New Zealand.

Roofs – Best practice guidelines for working on roofs.

Excavation and shafts for foundations.

Hazardous substances.

Noise in the workplace.

Powder-actuated hand-held fastening tools.

Power-operated elevating work platforms.

Manual handling – Code of practice for manual handling.

(3 marks)

(b) Minimise.

Eliminate.

(2 marks)

**Total 5 marks**

#### **ANSWER 5**

Any fixtures discharging to ORG correct size.

System vented in correct location(s) and size(s).

Any FWGs correctly charged.

Underfloor pipework and branches sized correctly.

All fixtures allowed for.

No changes to drainage.

**Total 9 marks**

#### **ANSWER 6**

(a) Any FOUR (1 mark each)

Soil type.

Weather.

Water table level.

Ground contamination.

Underground service location.

Maintaining site access.

Impact on other people on site.

(4 marks)

(b) Any SIX (1 mark each)

- Keep spoil and machinery away from the edge of the trench.
- Use shoring/trench shield etc.
- Use a ladder to access and exit the trench.
- Put up barricades around the perimeter of the trench to prevent objects and people falling into the trench.
- Monitor the air quality in the trench.
- Check the soil moisture levels regularly – too dry or too wet can cause trench collapse.
- Dewatering.
- Safe slope.

(6 marks)

**Total 10 marks**

## ANSWER 7

(a) Any THREE (1 mark each)

- The TPR connection diameter provided on the hot water cylinder.
- The pressure rating of the hot water cylinder.
- The pressure rating of the cold water expansion valve.
- The cold water supply flow rate.
- The energy input of the heat source.

(3 marks)

(b) The cold water expansion valve must have a pressure rating higher than the pressure reducing or pressure limiting valve but less than the pressure rating of the relief valve.

(1 mark)

(c) Any TWO (1 mark each)

- It must be accessible for servicing.
- It must comply with minimum head requirements (subject to the maximum available head). Installed as low as practicable.
- It must be installed with 1 m or more pipe work between the valve and the cylinder outlet.
- If installed on a low pressure system, the valve must be within 2 m of the hot water cylinder outlet.

(2 marks)

(d) Any ONE

Acceptable solution document	Pressure	Time
NZBC clause G12/AS1 Water Supplies	1500 kPa	15 minutes
AS/NZS 3500 Part 4	1500 kPa	30 minutes

(3 marks)

**Total 9 marks**

## ANSWER 8

- (a) Volume =  $0.7854 \times D^2 \times H$
- A  $0.7854 \times 0.032^2 \times 2 = 0.001608 \text{ m}^3$
- B  $0.7854 \times 0.025^2 \times 3 = 0.001473 \text{ m}^3$
- C  $0.7854 \times 0.015^2 \times 4 = 0.000707 \text{ m}^3$
- D  $0.7854 \times 0.015^2 \times 3 = 0.000530 \text{ m}^3$
- E  $0.7854 \times 0.020^2 \times 8 = 0.002513 \text{ m}^3$
- Total volume =  $0.006831 \text{ m}^3$  (4 marks)
- (b) Total pipework volume = 6.8litres  
No. of grams =  $1500 + 6.8 \times 0.05$   
= 75.34 (2 marks)
- (c) The water contains organic matter or has a chemical composition that requires a greater dosage. (1 mark)

**Total 7 marks**

## ANSWER 9

- (a) Any FIVE (1 mark each)
- Debris on the glass.
  - Trees grown taller in the area.
  - Air lock valve functioning.
  - Selective surface breaking down.
  - Penetrations on roof/supporting structure – firm and water tight.
  - Any leaks in collector or pipework connections.
- (5 marks)
- (b) Any TWO (1 mark each)
- Frost valve.
  - Insulation.
  - Switch to activate circulating pump to move warm water through panels.
  - Use glycol or antifreeze in an indirect system.
  - Drain back system.
- (3 marks)
- (c) Any ONE (1 mark)
- Can obtain higher temperatures.
  - Smaller collector size for same gain.
  - More range with orientation of panel.
  - Less prone to frost damage.
  - Less weight on roof.
  - Easier to maintain/repair.
- (1 mark)

**Total 9 marks**

## ANSWER 10

- (a) Any THREE (1 mark each)
- Replace the shower rose/head.
  - Clear out any debris.
  - Increase the pressure at the pressure reducing valve if fitted.
  - Replace an open vent with a pressure relief valve and cold water expansion valve system.
  - Replace water storage cylinder with a continuous flow water heater.
  - Replace an open-vented water storage cylinder with a valve-vented cylinder. (3 marks)
- (b) Any THREE (1 mark each)
- Adding another heat source to a water storage heater (solar, wetback).
  - Relocating an existing water storage heater connected to an existing wetback.
  - Replacing an existing woodburner and wetback system. (3 marks)

**Total 6 marks**

## ANSWER 11

- (a) (i) Any ONE (2 marks)
- If one or more floors separate the highest and lowest branch discharge pipe connected to the stack.
  - Every discharge stack serving fixtures or appliances from 3 floors within a building shall include a relief vent pipe.
- (ii) Required on a stack of 20 or more levels measured from the highest connected discharge pipe to the connection point of any relief vent. (2 marks)
- (b) (i) Any FOUR (½ mark each)
- Single stack;
- The stack loading shall not exceed 30 fixture units.
  - No more than one of each of the following types of fixtures at each level, basin, bath, DW, kitchen sink, shower.
  - Laundry troughs cannot discharge into the stack.
  - Clothes washing machine cannot discharge into the stack.
  - Each fixture must enter the stack with an individual discharge pipe.
  - The stack must be straight between the discharge pipe of the highest fixture connected and the drain.
  - The stack must be connected to a 100 mm drain.
  - Can only be offset above the highest discharge branch connection and any offset must be 45° or greater.
- OR
- Fully vented;
- The stack can carry discharge from 2 WC pans or slop hoppers for each discharge branch connected.
  - 40 discharge units per stack.
  - 13 discharge units per floor. (2 marks)

(ii) Any FOUR (1 mark each)

- Must be of compatible material.
- Must have a maximum of 3 m spacing.
- Must be lined with PVC or other compatible non-abrasive material.
- Fixing must be protected if in a corrosive environment.
- Must be able to withstand applied load.
- Must be attached to the building structure and not to any other surface.
- Must permit longitudinal movement.
- Must securely clamp any expansion joint that is fitted.

(4 marks)

**Total 8 marks**

## **SECTION B**

1. D 110 mm.
2. E 45°
3. D 86 mm.
4. A The temperature must reach 60°C or higher once a week for not less than 1 hour.
5. D To prevent trap seal loss.
6. A To recover plant and equipment from the site.
7. B WorkSafe.
8. B 12 months.
9. C 150 mm.
10. C 45°C.
11. D 3 months.
12. B 1 April.

**Total 12 marks**