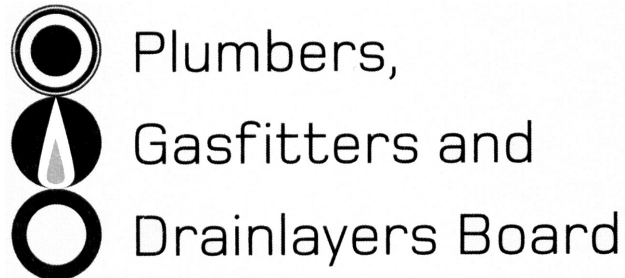


No. 9195



REGISTRATION EXAMINATION, NOVEMBER 2013
CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

- (a) $125 \times 6 = 750$
 $630 \times 2 = 1500$ (litres) (1 mark)
- (b) $8000 / 1000 = 8 \text{ m}^3$ (1 mark)
 $A = \pi r^2 = 3.142 \times 13^2 = 5.31 \text{ m}^2$ (2 marks)
 $H = \frac{V}{A} = \frac{8}{5.31} = 1.506 \text{ m}$ (1 mark)
- (4 marks)
Total 5 marks

ANSWER 2

- (a) • Floor waste gully included in design.
• Only acceptable fixtures discharging into floor waste gully. (2 marks)
- (b) • Existing vent extended through levels.
• Upper stack relief vent installed at correct location.
• Branch drain vented at correct location.
• Fixtures discharging to floor waste gully not vented. (4 marks)

(c)

Wash hand basin A outlet	40 mm or 32 mm FWG
Wash hand basin A trap	40 mm
Wash hand basin A fixture discharge pipe	40 mm
Shower outlet	40 mm
Shower trap	40 mm
Shower fixture discharge pipe	40 mm
Sink outlet	40 mm
Sink trap	40 mm
Sink fixture discharge pipe	40 mm
WC pan outlet	100 mm
WC pan fixture discharge pipe	80 mm or 100 mm
Wash hand basin B outlet	40 mm or 32 mm FWG
Wash hand basin B trap	40 mm
Wash hand basin B fixture discharge pipe	40 mm
Floor waste gully outlet	50 mm

(1 mark per fixture), (6 marks)

Total 12 marks

Reference: AS/NZS.2 Appendix D

ANSWER 3

(a) (i) Drawing to show poppet valve and stem. (1 mark)

(ii) Back Siphonage. (1 mark)

(iii) A break or large draw off in the water main upstream from the valve. (1 mark)

(b) During normal flow the poppet raises allowing water into the downstream section of pipework. When the water supply is shut off the water remaining in the pipework drains through the open outlet and air can enter the pipework through the port.

This allows the poppet to lower onto the seat of the valve preventing any possibility of back siphonage.

(3 marks)

Total 6 marks

ANSWER 4

Diagram to show the following

- Suitable valve train.
- Tempering valve installed.
- CFWH manifold correct and balanced.
- Hot water feed to outlets.
- Cold water feed to bottom of HWC.
- Flow and return to/from CFWH to HWC.
- Circulation pump installed correctly with non-return valve as required.

Total 8 marks

ANSWER 5

Fixtures discharging to ORG

- Sink to ORG must be 65 – no vent required.
- FWG in main bathroom under 6 m – 50 mm.
- FWG in main bathroom over 6 m under 10 m – 65 mm.
- FWG in master bathroom 65 mm.
- Laundry to ORG – overlength.

Venting

- Main vent 50 mm diameter.
- Branch vents where required (branch over 10 m and under 10 du) 40 mm.
- Branch vents where required (branch over 10 m and over 10 du) 50 mm.

Deduct marks for:

- FWG receiving fixtures from another room.
- FWG receiving waste from kitchen sink / toilet.
- Fixture discharge pipes to FWG incorrect size.
- Main drain not 100 mm.
- Main drain not reducing where possible.
- Branch drains not 65 mm.
- Missed fixtures

Total 9 marks

ANSWER 6

Location	Pump Type	Advantage	Disadvantage
A	Submersible	Quiet No suction, priming issues.	By the time it's broken it's beyond repair – no overheat cutout.
B	Deep well	Easy to access for maintenance. Good delivery pressure.	Blocked foot valve.
C	Jet or Ejector	Easy to access for maintenance. Nearby in case of resetting etc. Can hear if it is constantly running.	Noisy. Lower performance – delivery pressure.

Additional suitable answers are accepted.

Total 9 marks

ANSWER 7

- (a) In buildings other than housing, grease converters must be provided where the waste water is likely to convey grease. (1 mark)
- (b) Bacteria aided by the regular dosing of enzymes breaks down the oil and grease into waste suitable for discharge to the drainage system together with the waste water. (2 marks)
- (c) Small / compact. (1 mark)
- (d) Any ONE
- Smell.
 - Servicing requirement. (1 mark)
- Total 5 marks**

ANSWER 8

- (a) Any ONE
- A copper stack that extends through more than two floors.
 - Where a graded discharge pipe is restrained and more than 6 metres in length.
 - Where an appliance that is supplied with steam is connected to the system. (1 mark)
- (b) Any TWO
- A rubber sleeve with hose clamps connecting the two sections of pipe OR a rubber ring socket with a spigot. (1 mark)
 - Anchor point. (1 mark)
 - Gap. (1 mark)
- (2 marks)
- Total 3 marks**

ANSWER 9

- (a) Relief vents connect to stacks and header vent correctly. (2 marks)
- (b) Each section of vent pipe sized correctly. (4 marks)
- Total 6 marks**

ANSWER 10

(a) Any TWO (1 mark each)

- Frost valve.
- Switch to activate circulating pump to move warm water through panels.
- Use glycol or antifreeze in an indirect system.
- Drain back system.

(2 marks)

(b) Diagram to show:

- Cross-section.
- Inner rod.
- Outer casing.
- Manifold / header.

(4 marks)

(c) Any FIVE (1 mark each)

- Have no valves fitted.
- Have the primary flow and return pipes of a minimum nominal diameter.
- Have the primary flow and return pipes rise or fall in a continuous gradient.
- Have the primary flow and return pipes insulated.
- Have no dissimilar metals in the primary flow and return lines.
- Have no elbows fitted in or to the primary flow and return lines.
- Have the flow and return line connections made only with unions.
- Be vented to atmosphere.
- Be fitted with a tempering valve.
- Have storage facility / panels sized correctly for each other.
- Use copper / metallic pipe.
- Have seismic restraints installed.
- Have clearances for combustibles.

(5 marks)

(d) Any ONE

- 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 maintenance / repair.

(1 mark)

Total 12 marks

ANSWER 11

(a) Any FIVE (1 mark each)

- The site the meeting is regarding.
- The supervisor for the site.
- The date of the meeting.
- Names and signatures of those people attending the meeting.
- Site specific details that were discussed.
- Action required to be taken.
- Person responsible for taking action.

(5 marks)

(b) Any FIVE (1 mark each)

- Location of the accident.
- Date and time of the accident.
- Name of person who had the accident.
- Description of the accident.
- Type of injury (if any) received.
- Action taken with regards to the accident – first aid, corrective action, review of hazard register.
- Did the accident result in serious harm?
- Has the appropriate department (OSH, DOL, MBIE) been advised of the accident if required?
- Has an investigation been undertaken?
- Date investigation outcomes were discussed at a safety meeting to advise other staff members of risk and action taken.

(5 marks)

Total 10 marks

SECTION B

- 1 C 300 mm.
- 2 E Between 800 mm and 850 mm.
- 3 D When there are more than 10 employees working in the building.
- 4 E 1500 kPa.
- 5 A 25 mm.
- 6 C 75
- 7 B Purple.
- 8 C 600 mm.
- 9 D 1.3 m.
- 10 C 0.65
- 11 E Replacing an open-vented hot water cylinder with a valve-vented hot water cylinder in the same position.
- 12 A To allow air to escape a water pipe system when filling the system with water.
- 13 D When the riser main is installed in an area susceptible to freezing.
- 14 D 100 mm.
- 15 D 54 m

Total 15 marks