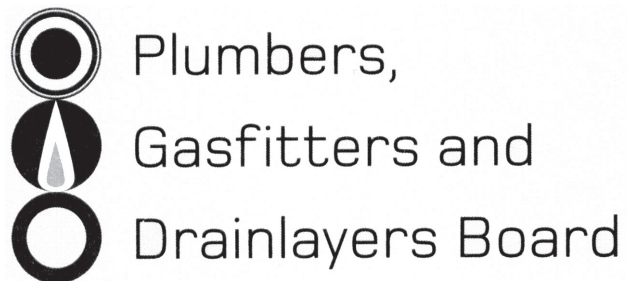


No. 9195



REGISTRATION EXAMINATION, NOVEMBER 2018
CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

- (a)
- | Situation | Temperature |
|---|-------------|
| Supply to a wash hand basin at a preschool. | 45°C |
| Supply to a wash hand basin in a commercial building. | 55°C |
| Supply to a bath in a dwelling. | 55°C |
| Internal hot water cylinder temperature to prevent the growth of legionella bacteria. | 60°C |
- (b) (i) 200 litres (1 mark)
- (ii) Within 100 mm of the top and bottom of the cylinder (½ mark)
and at the centre of the cylinder. (½ mark)
- Total 4 marks**

ANSWER 2

- (a) (i)
- Scaffolding.
 - Edge protection.
 - Mechanical access – mobile elevating work platforms e.g. scissor lift, cherry picker, hoist, knuckle boom.
 - Safety mesh. (4 marks)
- (ii) When there is a risk of falling 5 metres or more. (1 mark)
- (b) (i) Any THREE (1 mark each)
- The space is not designed for human occupation.
 - The space has limited entries and exits.
 - The space may contain a hazardous atmosphere (for example sewer gases or welding fumes etc).
 - The space is constructed in a way that restricts airflow and may result in the worker running out of oxygen or becoming trapped due to the space getting smaller the further the worker enters.
 - The space contains a material that could engulf the worker (sawdust or grain) and become either a breathing or fire hazard. (3 marks)
- (ii) The PCBU/primary contractor. (1 mark)
- (iii) Any ONE (1 mark)
- Working in an excavation more than 1.5 m deep and less than 1.5 m wide at the top.
Where friable asbestos may be present.
Worker is required to breathe air or gas that has been compressed or under pressure.
Where the confined space is a tunnel or drive underground.
If explosives are being used or stored. (1 mark)
- (c) WorkSafe. (1 mark)
- Total 11 marks**

ANSWER 3

(a) Any ONE (1 mark)

The replacement cylinder is a comparable open-vented water storage heater and is fixed in the same position, and uses the same pipework, as the replaced water storage heater ("like for like").

The cylinder is being replaced with a gas-fired continuous flow water heater (and the wetback is to be disconnected).

(1 mark)

(b) Any ONE (1 mark)

The cylinder is being replaced by a valve-vented water storage heater.

The cylinder is being relocated.

(1 mark)

(c) 12 months.

(1 mark)

Total 3 marks

ANSWER 4

$$q = \sqrt{\frac{H \times D^5}{25 \times L \times 10^5}} \quad \text{Use of Box's formula (1 mark)}$$

$$= \sqrt{\frac{4 \times 20^5}{25 \times 12 \times 10^5}} \quad \text{Substitution (2 marks)}$$

$$= \sqrt{0.42667}$$

$$= 0.653 \text{ litres} \quad (2 \text{ marks})$$

Total 5 marks

ANSWER 5

- (a) Any SIX (½ mark each)
- Spouting and roof free from rust.
 - Spouting and roof free from flaking paint.
 - No trees over hanging roof and spouting.
 - Move TV aerial if located on roof to help prevent birds perching.
 - Location of chimneys/flues that may discharge soot.
 - Lead flashings or lead based paint on the roof.
 - Bitumen based roofing materials.
 - Friable asbestos roofing products.
 - Any exposed treated timber that may leech into the rainwater. (3 marks)
- (b) Any TWO
- Leaf guard or leaf diverter used to prevent leaves etc entering downpipes.
 - First flush diverter included to discharge the first amount of water during rainfall to waste. (2 marks)
- Total 5 marks**

ANSWER 6

- (a) Drawing has correct connection points, fall etc for:
- Relief vents (2 marks)
 - Header vents (1 mark)
 - Stack vent (1 mark)
- (4 marks)
- (b) Correctly sized:
- Relief vents (4 marks)
 - Header vents (2 marks)
 - Stack vent (1 mark)
- (7 marks)
- Total 11 marks**

ANSWER 7

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 plan.

Total 9 marks

ANSWER 8

- (a) The IQP must be registered with the territorial authority.
The IQP must have no financial interest in the building to which the device is installed.
Unless the IQP is a suitable licensed plumber, he cannot undertake maintenance of the device.
(3 marks)
- (b) (i) Any THREE (1 mark each)
At least once a year.
Immediately after installation.
After any maintenance work.
After a backflow (or suspected backflow) incident.
When officially requested (e.g. by area health officer).
(3 marks)
- (ii) The building owner.
(1 mark)

Total 7 marks

ANSWER 9

- (a) 4.64 m.
(b) $4.64 + 2.60 + 1.20 = 8.44$ m.
(c) $2.60 + 1.20 + 0.38 + 0.55 = 4.73$ m.
(d) $2.60 + 1.20 + 0.38 = 4.18$ m.
(e) $1.27 + 4.64 + 2.60 + 1.20 + 0.38 + 0.55 = 10.64$ m.

Total 5 marks

ANSWER 10

Index length	Pressure drop
33 – 34.5 (3 marks)	42 m head (2 marks)

Pipe Section	Total Loading Units	Probable Simultaneous Flow Rate (L/s)	Pipe size DN
A-B	30	0.47	25 mm
B-C	4	0.20	15 mm
B-D	26	0.43	20 mm
D-E	2	0.10	15 mm
E-F	24	0.42	20 mm
F-G	8	0.20	15 mm
F-H	16	0.34	18 mm
H-I	3	0.12	15 mm
H-J	13	0.30	18 mm
J-K	3	0.14	15 mm
K-L	2	0.10	15 mm
J-M	10	0.26	18 mm
M-N	2	0.10	15 mm

(1 mark each row)

Total 18 marks

ANSWER 11

- (a) (i) A 75 mm
B 300 mm
C 50 mm
D 100 mm (4 marks)
- (ii) Cross at not less than 45°.
Be marked along its length (for 1 m either side of the crossover point) with tape (150 mm above the water service). (2 marks)
- (b) 500 mm (1 mark)
- Total 7 marks**

ANSWER 12

- (a) 3 months. (1 mark)
- (b) A fine (not exceeding \$500). (1 mark)
- Total 2 marks**

SECTION B

1. A Slop hoppers.
2. D To prevent trap seal loss.
3. B 3.
4. C A double-bowl vanity where the two bowls share one trap.
5. D 15 years.
6. E 50 years.
7. C 100 mm.
8. B 200 litres.
9. A Recovering plant and equipment from the site.
10. C Eliminate the hazard from the employee's workplace.
11. B Plumber B.
12. D 50 mm.
13. D 54 m.

Total 15 marks