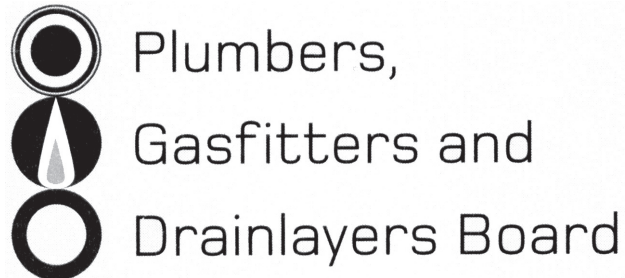


No. 9195



REGISTRATION EXAMINATION, JUNE 2016
CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

- (a) $N = \sqrt{\left(\frac{65}{20}\right)^5}$
 $N = \sqrt{32.5^5}$ (1 mark)
 $N = \sqrt{362.59}$ (1 mark)
 $N = 19.04$ so 19 (or 20) motel units (1 mark) (3 marks)
- (b) Installing a UV filter on a tempered ring main.
Running the ring main with untempered water and tempering at each lateral. (2 marks)
- (c) After the last branch off the ring main as water is returning to the heating system. (1 mark)

Total 6 marks

ANSWER 2

Index length of installation	Pressure drop
42	45.3

Pipe Section	Probable simultaneous demand (L/s)	Nominal pipe size (DN)
A – B	1.17	25
B – C	1.03	25
C – D	0.70	25
D – E	0.48	20
C – F	0.70	25
F – G	0.48	20
F – H	0.48	20

Total 17 marks

ANSWER 3

If fixtures discharging to ORG

Kitchen sink 40 mm no vent

Scullery to ORG 40 mm needs vent

Scullery to ORG 65 mm no vent req

Venting

Main vent 50 mm diameter

Main vent location

Correct number of vents

Fixtures to FWG if used

FWG receiving fixtures from another room (minus 3)

FWG receiving waste from kitchen sink/toilet (minus 3)

Fixture discharge pipes to FWG incorrect size (minus 1 max of 3)

Main and branches

Main drain not 100 mm

Branch drains not 65 mm

Drainage plan altered (minus 3)

Missed fixtures (minus 1 each)

Total 9 marks

ANSWER 4

$6500 \div 60 = 108.33$ litres per minute (1 mark)

Refer to 114 on table (nearest to 108.33)

114 litres per minute in 32 mm polyethylene = 20 (metres loss per 100 metres of pipe). ($\frac{1}{2}$ mark)

$20 \div 100 = 0.2$ litres per metre

Delivery pipe length is $26 + 9 + 2 = 37$ metres (1 mark)

$37 \text{ metres} \times 0.2 = 7.4$ metres friction loss ($\frac{1}{2}$ mark)

Total delivery head = $9 + 7.4 = 16.4$ (1 mark)

Total 4 marks

ANSWER 5

Relief vent, connected correctly	(2 marks)
All other fixtures vented as required	(3 marks)
Vents rising and terminating at correct locations	(1 mark)
Unnecessary cross vents	(minus 1)
Vents terminating in stack	(0 marks)

Total 6 marks

ANSWER 6

(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.

Any possible pollution.

(3 marks)

(b) 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 7

(a) Fault locations correctly identified.

(2 marks)

(b) Faults described matching with identified locations

Non-return valve fitted on inlet to cylinder – making CWE valve defunct, increased chance of pressure build up.

Ring main is specified at 55° but tempering valve is set to 45° – cooling water below outlet requirements.

Ring main doesn't return to heat source – water will lose heat and have no way of reheating.

No relief valve for vent fitted to cylinder.

The first non-return valve should be after the pressure limiting/reducing valve to protect it, not before.

(4 marks)

Total 6 marks

ANSWER 8

- (a) Any THREE (1 mark each)
- PGDB ACT
 - PGD Regulations
 - Gazette Notices
 - Building Act (3 marks)
- (b) G12/AS1
- G13/AS1
 - G13/AS3 (AS/NZS 3500 Part 2)
 - G1/AS1 (2 marks)
- Total 5 marks**

ANSWER 9

- (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 10

- (a) Any THREE (1 mark each)
- Is large enough for a worker to enter and perform assigned work.
 - Has limited entries and exits.
 - May contain a hazardous atmosphere, arising from chemicals, sludge or sewage.
 - Is constructed so that anyone who enters could be asphyxiated or trapped by walls or floor that converge to a small cross-section, such as a hopper.
 - Contains a material, such as sawdust or grain that could engulf anyone who enters. (3 marks)
- (b) Any ONE (1 mark each)
- Worker 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)
- Total 4 marks**

ANSWER 11

Any THREE (1 mark each)

Fire collars.

Fire wraps.

Fire sleeves.

Fire pillows.

Mastic sealant.

Fire-proof foams.

Total 3 marks

ANSWER 12

(a) (i) Any TWO (1 mark each):

Hearing

Exposure to chemicals/solvents

Exposure to lead

Exposure to asbestos

Exposure to hepatitis or other sewage borne diseases

(2 marks)

(ii) Any FOUR (1 mark each):

A description of the hazard and possible outcome

A description of how it can cause harm to the employee, including maximum exposure levels and the number of times they will be exposed to the hazard

Only their health in relation to the specific hazard is to be monitored

Any information will be treated in confidence

The results of the monitoring will be made available to them

(4 marks)

(b) To wear all PPE gear required correctly

To maintain the gear

Report any damaged gear

To be trained in its use

(2 marks)

Total 8 marks

ANSWER 13

Fitting, fixture or installation	High	Medium	Low
Carbonated drink dispenser		✓	
Hair dresser's sink	✓		
Swimming pool and spa		✓	
Auxiliary water supply		✓	
Dentist's spittoon	✓		
Livestock water supply with added chemicals	✓		
Boiler, chiller and cooling tower make-up water	✓		
Pest control equipment	✓		
Car washing facility	✓		
Non-carbonated drink dispenser			✓
Fire sprinkler system using toxic additives	✓		
Untreated water storage tank		✓	

SECTION B

1. B Plumber B.
2. A To recover plant and equipment from the site.
3. E 7 days.
4. B WorkSafe New Zealand.
5. A 24 hours.
6. C When the employee provides his/her own suitable PPE gear.
7. E Replacing a noisy piece of machinery with a quieter model.
8. C Providing and wearing personal protective equipment to prevent injury.
9. A Constructing a barricade around a piece of machinery to prevent workers coming into contact with a hazard.
10. B 3

Total 10 marks