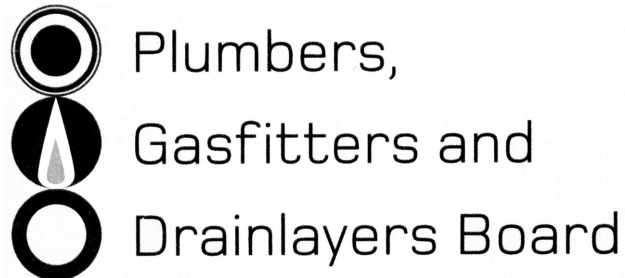


No. 9195



REGISTRATION EXAMINATION, NOVEMBER 2019
CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

Item	Length of time (years)
Single lever mixer including flexible connections	5
Under slab discharge pipework	50
EDPM Rubber boot flashing sealing roof penetration	15

Total 3 marks

ANSWER 2

- (a) (i) & (ii) • 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. (9 marks)
- (a) (iii) Filled with water to either the spill level of the highest fixture or the flood level of the lowest sanitary fixture whichever is the highest. Not to exceed 3 metres. Water level must be maintained without leakage for minimum of 15 minutes. (2 marks)
- (b) (i) 1500 kPa for at least 30 minutes. (2 marks)
- (ii) Any THREE (1 mark each)
• The pipes are positioned according to the plan.
• The pipework should be flushed.
• The pipes should be crimped or capped to prevent debris entering the pipe.
• The pipes should be lagged and sleeved to prevent contact with the concrete and provide room for expansion.
• The pipes should be supported to ensure they will exit the slab at a 90° angle to the surface of the slab. (3 marks)

Total 16 marks

ANSWER 3

- (a) Any THREE (1 mark each)
- Support should be constructed of H3 treated timber to protect against moisture damage from condensation.
 - Supported by one or more load bearing walls.
 - Where sited over one wall only, the tank must be placed no more than 300 mm off centre from the wall.
 - The load must not be carried by ceiling joists, unless ceiling joist are directly above a wall.
 - The tank must be seismically restrained.
 - If the tank is metallic a non-corrosive insulating material must be installed between the support and the underside of the tank. (3 marks)

- (b) To prevent dust, vermin, birds etc gaining access to the water supply.
To reduce condensation in the ceiling space. (2 marks)
- (c) $3300 + 100 = 3400$ mm length between fixed points
 $625 - 300 - 200 - 43 = 82$ mm fall between fixed points
 $3400 \div 82 = 41.46$
 Gradient = 1:41 or 2.44%

Total 8 marks

ANSWER 4

- (a) Venting
- | | |
|-----------------------------------------------------------------|------------|
| Relief vent connected below lowest fixture in stack | (1 mark) |
| Relief vent terminates correctly | (1 mark) |
| Cross relief on every floor | (1 mark) |
| Cross relief in correct position | (1 mark) |
| Relief cross vents 50 mm | (1 mark) |
| Fixtures connected to soil stack | (1 mark) |
| Fixtures in ranges or individual | (3 marks) |
| Fixtures discharge diameters | (1 mark) |
| Incorrect fixture or branch vents when relief and cross correct | (-2 marks) |
- (10 marks)
- (b) (i) Any THREE (1 mark each)
- Undiluted urinal waste.
 - Photographic equipment.
 - Cooling towers.
 - Other trade wastes that will corrode the copper.
 - Discharge from grease arrestors. (3 marks)
- (b) (ii) Any THREE (1 mark each)
- At the base of the stack.
 - On alternate floors.
 - Above the junction of the highest discharge pipe on that floor.
 - On every floor if the stack is subjected to discharge above 60°C. (3 marks)

Total 16 marks

ANSWER 5

- (a) Drawing to show:
- Cold water feed has correct valve train. (2 marks)
 - Relief valve fitted to HWC. (1 mark)
 - Pump installed on system. (1 mark)
 - Pump in correct location. (1 mark)
 - Non return valve location. (1 mark)
 - Tempering valves to be installed correctly. (2 marks)
 - Ring main connected correctly to HWC. (1 mark)
 - Ring main not connected to HWC correctly. (-3 marks)
 - UV not installed if required. (-3 marks)
- (9 marks)
- (b) $T_1 = 40 - 13 = 27$ (½ mark)
- $T_2 = 65 - 13 = 52$ (½ mark)
- Flow rate = $\frac{9}{60} = 0.15$ litres/s (1 mark)
- Storage required = $\frac{510 \times 0.15 \times 8 \times 27}{52 \times 75\%}$ (2 marks)
- = 423.69 litres (1 mark)
- (5 marks)

Total 14 marks

ANSWER 6

Index Length	Pressure Drop
43.5 mm	42 kPa

Pipe section	Total loading units	Probable simultaneous flow rate (L/S)	Pipe size (DN)
A – B	22	0.40	20 mm
B – C	5	0.18	15 mm
C – D	3	0.14	15 mm
D – E	2	0.10	15 mm
D – F	1	0.10	15 mm
C – G	2	0.10	15 mm
B – I	17	0.35	18 mm
I – H	2	0.10	15 mm
I – J	15	0.33	18 mm
J – K	12	0.29	18 mm
K – L	4	0.20	18 mm

Length: 3 marks

Pressure Drop: 2 marks

Table: Each row 3 entries correct = 1 mark, 2 entries correct = ½ mark

Total 16 marks

ANSWER 7

- (a) (i) Any FOUR (1 mark each)
- Asbestos.
 - Silica dust.
 - Biological dust – animal droppings, carcasses.
 - Mould.
 - Wood dust.
 - Soil dust.
 - Insulation dust. (4 marks)
- (ii) Any TWO (1 mark each)
- Water/wet the area to keep the dust out of the air.
 - Wear suitable breathing apparatus.
 - Wear protective clothing, safety glasses, gloves etc.
 - Vacuum dust.
 - Have a ventilation system. (2 marks)
- (b) Any FOUR (1 mark each)
- How to adjust guards.
 - PPE to be worn.
 - Method of isolation – turning on and off.
 - Pre-use inspections.
 - Procedure to be followed in emergency. (4 marks)
- (c) (i) Any THREE (1 mark each)
- Construction work with a risk of falling 5 metres or more.
 - Erecting or dismantling scaffolding with a risk falling 5 metres or more.
 - Work in any pit, shaft, trench, or other excavation in which any person is required to work in a space more than 1.5 metres deep and having a depth greater than the horizontal width at the top.
 - Work in any drive, excavation, or heading in which any person is required to work with a ground cover overhead.
 - Work involving the use of explosives, or storage of explosives for use.
 - Work that in which a person breathes compressed air, or respiratory medium other than air.
 - Working with asbestos. (3 marks)
- (ii) WorkSafe. (1 mark)
- (iii) 24 hours. (1 mark)

(iv) Any FOUR (1 mark each)

Category/nature of work being carried out. Description of work being undertaken.

Address of work site.

Type of business (PCBU, contractor, sub-contractor).

Contact details of contractor in charge.

Date work due to commence.

Date work due to be completed.

(4 marks)

Total 19 marks

SECTION B

1. D 2 × the inlet diameter or 25 mm whichever is greater.
2. E The bypass must provide the same protection as the main.
3. B 150 mm.
4. C Once every year.
5. D The building owner.
6. E 300 mm.
7. B 100 mm.
8. A 50

Total 8 marks

