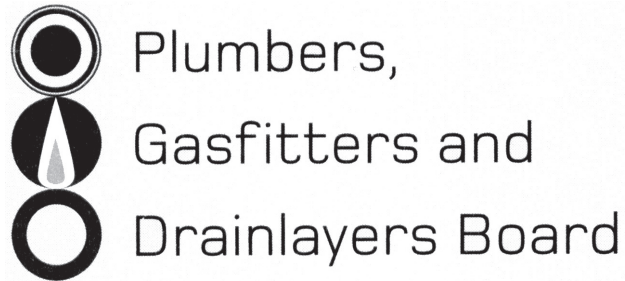


No. 9195



REGISTRATION EXAMINATION, JUNE 2019
CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

- (a) Any TWO (1 mark each)
- Back siphonage.
 - Back pressure with faulty 2nd check valve.
 - Split diaphragm.
 - Faulty 1st check valve. (2 marks)
- (b) Any TWO (1 mark each)
- Pressure vacuum breaker.
 - Double check valve.
 - Dual check valve. (2 marks)
- (c) (i) Copper. (1 mark)
- (ii) The carbon dioxide in the machine reacts with the copper, making the water toxic. (1 mark)
- (d) The bypass must have a suitable backflow prevention device for the hazard rating fitted.
The bypass must supply an adequate flow rate to the outlets. (2 marks)

Total 8 marks

ANSWER 2

- (a) (i) To stop the spread of fire and smoke.
- (ii) To hold the fire wrap in place (during a fire). (1 mark)

(b)

Location	Fire collar rating required (1 mark each)
A	240.240.240
D	120.120.120
E	180.180.180
F	240.240.240

(4 marks)

Total 6 marks

ANSWER 3

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 4

(a) Any FIVE (1 mark each)

- the amputation of any bodily part
- a serious head injury
- a serious eye injury
- a serious burn
- the separation of skin from an underlying tissue (such as degloving or scalping)
- a spinal injury
- the loss of a bodily function
- a serious laceration
- an injury or illness that requires, or would usually require, the person to be admitted to a hospital for immediate treatment
- an injury or illness that requires, or would usually require, the person to have medical treatment within 48 hours of exposure to a substance
- any serious infection (including occupational zoonoses) to which the carrying out of work is a significant contributing factor, including any infection that is attributable to carrying out work
 - with micro-organisms; or
 - that involves providing treatment or care to a person; or
 - that involves contact with human blood or bodily substances; or
 - that involves handling or contact with animals, animal hides, animal skins, animal wool or hair, animal carcasses, or animal waste products; or
 - that involves handling or contact with fish or marine mammals:any other injury or illness declared by regulations to be a notifiable injury or illness for the purposes of this section.

(5 marks)

(b) WorkSafe

(1 mark)

- (c)
- To assist an injured person.
 - To remove a deceased person.
 - To make the site safe or to minimise the risk of a further notifiable event.
 - An action that is done by, or under the direction of, a police officer acting in execution of his or her duties.
 - An action for which an inspector or the regulator (WorkSafe or other relevant government organisation) has given permission.

(4 marks)

Total 10 marks

ANSWER 5

(a) Any FIVE (1 mark each)

- Have a Health and Safety policy.
- Have regular health and safety meetings with all staff.
- Review work practices to ensure they are being completed in the safest manner possible.
- Supply and ensure all PPE required is worn.
- Ensure all workers are sufficiently trained in required tasks.
- Have emergency procedures for tasks and worksites.
- Complete risk assessments before starting any new work.
- Monitor workers' health if required. (5 marks)

(b) EITHER

Issue a notice (an improvement notice, a prohibition notice, non-disturbance notice, a suspension notice and a subsequent notice.

OR

Require that any unsafe actions cease immediately.

(1 mark)

Total 6 marks

ANSWER 6

(a) Any FOUR (½ mark each)

Seal all open ends of the pipework.

Pressurise pipe to 15 kPa.

Shut off the pump.

Allow pressure to stabilise over 3 minutes while checking for leaks.

Drop test pressure to 10 kPa.

(b) EITHER

Using AS/NZS 3500 Part 2 Sanitary plumbing and drainage

If the pressure drop over 2 minutes is no greater than 3 kPa, the pipework is sound. (2 marks)

OR

Using NZBC Clause G13 Foul Water

Seal all open ends of the pipework.

Pressurise pipe to 25 kPa.

Disconnect air.

Time until any pressure drop occurs (maximum 3 minutes, pressure less than 17 kPa).

If the pressure after 3 minutes is not less than 17 kPa, the pipework is sound. (2 marks)

Total 4 marks

ANSWER 7

- (a) 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)
- (b) EITHER (any TWO)
The number of seats available for customers in the restaurant X 5 litre per seat conversion rate. (2 marks)
- OR
Find the expected flow rate (based on the type and number of fixtures), and the style of cooking and check against manufacturer's specifications. (2 marks)
- (c) Any ONE (1 mark)
Actually treats the waste.
Can be installed inside or outside.
Easier to install. (1 mark)
- (d) Any ONE (1 mark each)
They need regular servicing.
They smell. (1 mark)

Total 6 marks

ANSWER 8

- (a) • Garden irrigation.
• Toilet. (2 marks)
- (b) Any THREE (1 mark each)
• Bath.
• Kitchen sink.
• Shower.
• Basin. (3 marks)

Total 5 marks

ANSWER 9

(a)	Total number of occupants	525 (½ mark)
	Design occupancy male	263 (½ mark for answers for male and female)
	Design occupancy female	263

(b)	Ablution blocks				
	WC Pans	Urinals	Basins	Showers/baths	
	Female	10 (2 marks)	0	7 (1 mark)	7 (1 mark)
	Male	8 (2 marks)	6 (2 marks)	7 (1 mark)	7 (1 mark)

Disabled access facilities		
WC Pans	Basins	Showers/baths
3 (1 mark)	3 (1 mark)	3 (1 mark)

(13 marks)

Total 14 marks

ANSWER 10

(a) Method: Thermosiphon (1 mark)

Design aspects: Any TWO (1 mark each):

- Base of solar store must be above the top of the collector – to prevent back siphoning.
- Circulator pipes must be sized correctly.
- Circulator pipes must be on correct gradient.
- Vented with expansion (top up) tank.
- Pipes must be insulated.

Method: Pump (1 mark)

Design aspects: Any TWO (1 mark each):

- Have a non-return valve fitted – to prevent back siphoning.
- Have a suitable collector for forced circulation systems.
- Have the correct pump type fitted (to return line).
- Have control devices (temperature sensors) fitted to turn pump on and off as required.

(6 marks)

(b) Non-potable heat transfer fluids can be incorporated into the system to prevent freezing and corrosion.

(1 mark)

- (c) Any FOUR (½ mark each)
- Number of people in the home.
 - Collector area.
 - Type of collector.
 - Thermostat setting.
 - Environmental factors (climate).
 - Variable usage.
 - Direction of the collector.
 - Tilt of the collector.
 - Shade.
 - Distance from collector to storage unit. (2 marks)

Total 9 marks

ANSWER 11

- (a) They must be installed in an accessible location. (1 mark)
- (b) Must only be used for non-drinking water.
Can only be used in above ground applications. (2 marks)
- (c) Reduce likelihood of water hammer.
Reduce damage to fixtures and fittings.
Prevent excessive noise. (3 marks)

Total 6 marks

ANSWER 12

- Include trap(s). (1 mark)
- Discharge pipe size and gradient. (1 mark)
- Vent diameter and gradient. (1 mark)
- Vent pipe correctly connected to discharge pipe. (1 mark)
- Vent pipe correctly terminated. (2 marks)

Total 6 marks

SECTION B

1. C Must be higher than that of the cold water expansion valve and lower than the cylinder.
2. D 60°C
3. A 100 mm.
4. B 3
5. D Every cylinder in the installation.
6. B 5
7. E A kindergarten or preschool.
8. B 50
9. B 40 mm.
10. A Purple.
11. C 12 months.

Total 11 marks