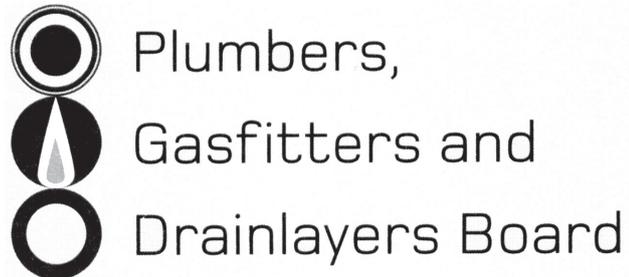


No. 9198



REGISTRATION EXAMINATION, JUNE 2014
CERTIFYING DRAINLAYER

ANSWER SCHEDULE

ANSWER 1

- (a) Diagram to show:
Drain to septic tank with fresh air inlet.
Septic tank.
Bio filter on tank outlet.
Outlet of septic tank providing cascade through tank.
Trench effluent disposal field. (5 marks)
- (b) Sewage enters the septic tank.
In the chamber the sewage separates; solids fall to the bottom and scum and floatables rise to the top. (1 mark)
Anaerobic bacteria digest the sewage, creating a clearer effluent liquid ready for discharge. (1 mark)
The effluent is filtered through the bio filter as it is discharged from the tank, retaining any solid material in the tank. (1 mark)
The effluent is discharged to the disposal field where aerobic bacteria further treat the effluent. (1 mark)
Sun, insects, plants, soil further breakdown the effluent so that it becomes safer for people and the environment. (1 mark)
- (5 marks)
Total 10 marks

ANSWER 2

Depth of invert of drain	
Point	Depth
A	668 mm
B	691 mm
C	791 mm
D	1099 mm
F	829 mm

(2 marks each)
Total 10 marks

ANSWER 3

- (a) • Store the waste in a holding tank for future disposal at a suitable site.
• Treat the waste until it reaches a standard acceptable to be discharged to the sewer or water course. (2 marks)
- (b) Any TWO (1 mark each)
G14 – Industrial Liquid Waste.
F3 – Hazardous Substances and Processes.
B2 – Durability. (2 marks)
- (c) • Must be seal-less or glandless.
• A remotely or automatically actuated shut-off valve must be installed in the pump inlet line. (2 marks)
- (d) Trap
Oil / petrol trap (1 mark)

Total 7 marks

ANSWER 4

- (a) (i) 3 months. (1 mark)
- (ii) A fine (up to \$500). (1 mark)
- (b) 12 months. (1 mark)
- (c) (i) To provide a method of completing a task in a safe manner that will comply with Occupational Health and Safety requirements. (1 mark)
- (ii) They may be used as evidence of good practice if the incident should result in a court hearing. (1 mark)

Total 5 marks

ANSWER 5

- (a) Vent pipework. (1 mark)
Inspection openings. (1 mark)

(2 marks)

(b)

Items	Quantities
Inspection junctions	3
Inspection bends	2
Plain junctions	2
Plain bends	2
Length of pipe (m) including wastage allowance	20

(3 mark)

Total 5 marks

ANSWER 6

- (a) Diagram to show:

- Removable/hinged lid. (1 mark)
- Outlet with junction to removable access cap 90 mm. (2 marks)
- Sump minimum diameter 375 mm. (1 mark)
- 300 mm deep area at base of sump for collection of debris. (1 mark)
- Seal/floor at base of sump. (1 mark)
- Maximum overall depth of 1000 mm. (1 mark)

(7 marks)

- (b) Any TWO (1 mark each)

- Type 2 has a larger chamber diameter.
- Type 2 has a larger outlet diameter.
- Type 2 has a deeper collection area.
- Type 2 has no maximum overall depth.

(2 marks)

Total 9 marks

ANSWER 7

- Check the drain for maintenance. (½ mark)
- Check that there are no additional catchment areas. (½ mark)
- Confirm that the secondary path is operational. (1 mark)

Total 2 marks

ANSWER 8

(a) Soakage or percolation test. (1 mark)

(b) Dig a hole to prescribed depth.

Fill the hole with water.

Measure the amount of time taken for the water to soak into the soil.

OR

Test the soil for flow rate by determining the soil's characteristics.

(3 marks)

Total 4 marks

ANSWER 9

Diagram to show:

- Minimum of one gully trap. (3 marks)
- Gully trap(s) not under the deck. (3 marks)
- Inspection openings at code locations. (3 marks)
- Venting as required. (1 mark)

Total 10 marks

ANSWER 10

Calculate gradient. (2 marks)

Deciding gradient steeper than 20%. (1 mark)

Jump-ups. (2 marks)

Location of jump-ups. (2 marks)

Spacing of jump-ups. (1 mark)

Inspections. (2 marks)

Total 10 marks

ANSWER 11

Back falling drain with one inspection opening at the connection point. (2 marks)

Surface water drain must be sealed to base of down pipe or drain extends up wall to above kerb level. (1 mark)

Flushing point at low end of drain. (2 marks)

NUO entry graded. (1 mark)

Total 6 marks

ANSWER 12

- (a) $V = 1.9 - 1.2 = 0.7$ (1 mark)
Trench open less than 24 hrs
Distance = 700 mm (1 mark)
(2 marks)
- (b) Area = 2600 m² (2 marks)
Modified area = $2600 \times 0.01 \times 35 = 910 \text{ m}^2$ (1 mark)
Pipe diameter = 225 mm (½ mark)
Correct size and gradient (½ mark)
(4 marks)
Total 6 marks

ANSWER 13

- Solution and category to be marked on merits. (1 mark each)
Total 6 marks

SECTION B

1. D A trench which is 1500 mm deep and 1000 mm wide.
2. B WorkSafe New Zealand.
3. A 24 hours.
4. D Accidents resulting in serious harm.
5. C When the employee provides his/her own suitable PPE gear.
6. A 600 mm.
7. B Discharge from waste water fixtures.
8. B Soak pit system.
9. E The number of seats provided for customers in the restaurant.
10. A 100 mm.

Total 10 marks