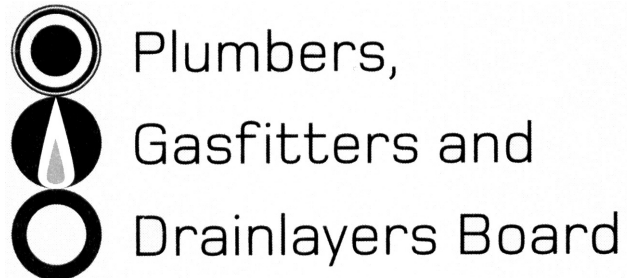


No. 9197



REGISTRATION EXAMINATION, JUNE 2013
LICENSED DRAINLAYER

ANSWER SCHEDULE

ANSWER 1

Document	Minimum Grade
E1	1:120 or 0.85%
G13	1:120 or 0.85%
AS/NZS 3500 Part 2	1:60 or 1.65%

(1 mark)

- (b) When the minimum grade cannot be achieved a lower gradient may be used providing minimum discharge rates can be achieved.

(1 mark)

Total 2 Marks

ANSWER 2

- (a) Any SIX (½ mark each)

- Aldehydes
- Ammonia
- nitrous fumes
- Hydrogen sulphide
- Carbon monoxide
- Carbon Dioxide
- Methane
- Hydrocarbons, petrol, LPG, Natural Gas

(3 marks)

- (b) Any TWO (½ mark each)

- Explosive
- Poisonous
- Cause asphyxiation

(1 mark)

- (c) (i) Process by which water that is absorbed by plants, usually through the roots, is evaporated into the atmosphere from the plant.

(2 marks)

- (ii) The change of a liquid into a vapour at a temperature below the boiling point.

(2 marks)

- (iii) The process of a liquid slowly passing through the ground (any porous medium).

(2 marks)

Total 10 Marks

ANSWER 3

(a) Any FOUR (1 mark each)

- Datum
- Ground level
- Invert depths for any section of the drain
- Gradients between pegs or connections.
- Whether ground cover over a drain is available
- Connection point to sewer
- Scale

(4 marks)

(b)

No.	Component	No.	Component
1	Inspection bend	7	Gully trap or overflow relief gully
2	Inspection opening	8	Splitter / indexing / distribution box
3	Sullage waste water tank	9	Inspection opening / junction
4	Fresh air inlet	10	Septic tank system
5	Main vent	11	Fresh air inlet
6	Gully trap or overflow relief gully	12	Main vent or gully trap

(½ mark each, 6 marks)

Total 10 Marks

ANSWER 4

(a)

Section	Total length of the section (m)	Total fall of the section (mm)
A – E	16	(264 – 272)
B – C	(9 – 9.4)	(148 – 160)
C – D	(13 – 13.4)	(214 – 228)
D – E	(4.8 – 5)	(79 – 85)
E – F	(9.5 – 9.8)	(156 – 167)
A – F	(25 – 29.9)	(420 – 508)
B – F	(36.3 – 37.6)	(598 – 639)

(½ mark each)

Total 7 Marks

ANSWER 5

Any FIVE (1 mark each)

- Sill
- Wingwall
- Pipe location, bedding
- Grating
- Driveway
- Direction of flow shown
- Energy dissipater

Total 5 Marks

ANSWER 6

- Must hold a current limited certificate.
- At all times, a trainee must be under the supervision of a certifying drainlayer
- In the first year of holding a limited certificate, the trainee must at all times work in the presence of the supervising drainlayer or a licensed drainlayer who is supervised by the same certifying drainlayer.

Total 3 Marks

ANSWER 7

- (a) The tank stores the effluent until a set level is reached, at which time all of the contents of the chamber is discharged into the disposal field at one time (i.e. doses the field).
(2 marks)
- (b) The increase in quantity forces the water further down the disposal field, spreading the load across the whole installation. There is then a longer period of time between discharges for the field to absorb the effluent and recover before the next dose.
(2 marks)
- (c)
- The effluent field can be laid through mounds of soil constructed above the natural ground level. (However with a gravity system the required fall would need to be achieved)
 - Sand filters, improving the effluent for direct discharge to ground water or above ground irrigation.
 - Drip lines.
- (3 marks)

Total 7 Marks

ANSWER 8

- (a) The total length along the centre line of a pipe and fittings including all bends. (1 mark)
- (b) To show the ground level at various points on the site in relation to the datum. (1 mark)

Total 2 Marks

ANSWER 9

- (a) (i) In a wet inspection chamber the bottom of the channel is used as the drain. (1 mark)
- (ii) In a dry inspection chamber permanent access is provided to a drain at the bottom of a chamber that has a sealed inspection plate to the drain. (1 mark)
- (b) Any FIVE (1 mark each)
- Chambers / structures
 - Jump-ups
 - Where drains enter or exit foundations
 - Unstable ground
 - Sewer connections
 - Grease traps
 - Where allowance for expansion or contraction is required
 - Where change of materials occurs
 - Where settlement is expected (5 marks)
- (c) Any ONE (1 mark)
- Boundary/Buchan trap
 - Septic tank (1 mark)

Total 8 Marks

ANSWER 10

- (a) Bubble up chamber (1 mark)
Where insufficient fall is available for a storm-water system (1 mark)
Raise the level of the drain to maintain minimum fall on a drain (1 mark)
(3 marks)
- (b) Surface water sump type 2 (1 mark)
Large open area to remove surface water (1 mark)
Trap silt and grit before it enters the system and allow access to access cap (1 mark)
(3 marks)
- (c) Soak Pit (1 mark)
Where no access to council storm-water system. (1 mark)
Help remove storm water by encouraging soakage into the ground. (1 mark)
(3 marks)

- (d) Sullage Dump Point. (1 mark)
 To provide a NUO receiving point for mobile homes/caravans etc. (1 mark)
 To receive foul-water from mobile home storage tanks. (1 mark)
- (3 marks)
Total 12 Marks

ANSWER 11

- Volume = 21.905 m³ (2 marks)
 Compaction = 4.381 m³
 Total volume = 26.286 m³ (1 mark)
 Correct unit (½ mark)
- Total 4 Marks**

ANSWER 12

Answer to include (1 mark each)

- Anchor blocks
- Y
- Inspection

Total 3 Marks

ANSWER 13

- (a) Any FOUR in sequence (1 mark each)
- Back fill to bottom walings
 - Compact soil
 - Remove the walings
 - Repeat the procedure all the way up
 - Remove poling boards/sheeting

(4 marks)

- | | | | |
|---------------|----------------------------|----------------------|-----------------------|
| (b) Sheeting: | Drawn or labelled (½ mark) | 200mmx50mm (1 mark) | Half to full (1 mark) |
| Struts: | Drawn or labelled (½ mark) | 150mmx150mm (1 mark) | 1.2m (1 mark) |
| Walings: | Drawn or labelled (½ mark) | 250mmx100mm (1 mark) | 1.2m (1 mark) |
| Props: | Drawn or labelled (½ mark) | | |

(8 marks)

Total 12 Marks

ANSWER 14

- (a) At the junction with the live drain, the property boundary or the sewer. (1 mark)
- (b) A drain plug, cap or stopper. (1 mark)
- (c) Any TWO (1 mark each)
- Can lead to major infiltration of ground water.
 - Leakage of sewage into the surrounding ground.
 - Roots can gain entry into the drain.
 - Vermin can get in.
- (2 marks)

Total 4 Marks

SECTION B

1. A
2. E
3. B
4. D
5. E
6. D
7. C
8. B
9. A
10. D
11. A

Total 11 Marks