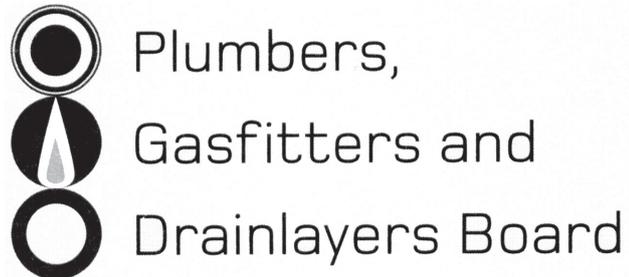


No. 9197



REGISTRATION EXAMINATION, NOVEMBER 2010  
**LICENSED DRAINLAYER**

**ANSWER SCHEDULE**



### ANSWER 1

- (a)  $25 \text{ m} \times 2 \div 100 = 0.5 \text{ metres}$
- (b)  $25 \text{ m} \div 40 = 0.625 \text{ metres}$

**Total 2 Marks**

### ANSWER 2

- (a) Any ONE (1 mark)

The additional quantity of material required to backfill.

The quantity of extra material required to backfill a compacted trench.

Additional to the true volume of the trench.

The amount a material will compress

(1 mark)

- (b) Volume of trench, minus volume of pipe, plus 25% for compaction

Volume of Trench

$$= 85 \text{ m} \times 450 \text{ mm} \times (50 + 110 + 100 \text{ mm})$$

$$= 85 \times 0.45 \times 0.260$$

(1 mark)

$$= 9.945$$

(1 mark)

Volume of Pipe

$$= (85 \text{ m} \times 110 \text{ mm} \times 110 \text{ mm} \times 0.7854)$$

$$= (85 \times 0.110^2 \times 0.7854)$$

(1 mark)

$$= 0.808$$

(1 mark)

$$= (9.945 - 0.808) \times 1.25$$

$$= 11.4 \text{ m}^3$$

(1 mark)

(5 marks)

**Total 6 Marks**

### ANSWER 3

The Department of Labour (OSH).

**Total 1 Mark**

### ANSWER 4

- (a) Any TWO (1 mark each)

Turn off the power at the source and get a new lead.

Withdrawn from service.

Report the problem to your Employer/Electrician.

- (b) Any TWO (1 mark each)

Turn off the power

Check the current being drawn through lead

Check lead is not in a damp location

Remove the leads and replace with a longer one with no joint.

Report problem to your Employer.

**Total 4 Marks**

## **ANSWER 5**

- (a) Damage to the workers' hands from the cement. (1 marks)
- (b) Wear rubber or other impervious gloves. (1 marks)

**Total 2 Marks**

## **ANSWER 6**

Any THREE (1 mark each)

1. Get a vaccination against Hepatitis.
2. Always wear rubber gloves when working on existing foul water drains. This includes unblocking drains.
3. Thoroughly clean all equipment and tools with a quality disinfectant immediately after finishing the work.
4. Wash your hands frequently and especially before eating or smoking, using a quality antibacterial/ antiviral preparation.
5. Avoid splashes to unprotected skin.
6. Use PPE.

**Total 3 Marks**

## **ANSWER 7**

(½ mark each)

- Exit the digger and turn it off.
- Warn people in the area that there is a possible gas leak and a danger of fire.
- Ring the Fire brigade
- Ring the local gas utility operator.
- Close windows of the nearest buildings to prevent gas entering the buildings.

**Total 2 Marks**

## **ANSWER 8**

Any ONE (1 mark)

Keep the area well ventilated  
Use a fan to move the dust away from any electrical equipment.  
Wet the area

**Total 1 Mark**

## ANSWER 9

(a) Any EIGHT (½ mark each)

De-water area if required

Expose a section of the existing drain.

Ensure the occupiers of the building are warned not to send any waste down the drain.

Cut a section out of the drain cut longer than the length of a UPVC 45° Inspection Junction.

Replace bedding

Checking that there is no extraneous matter in the drain.

Cement shorts of UPVC into each end of the junction.

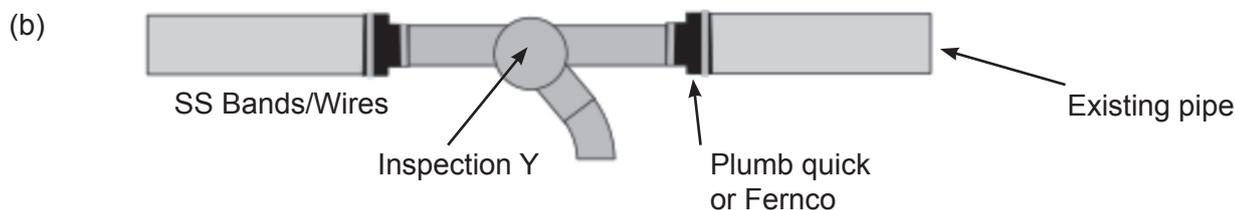
Slide two couplings onto these ends.

Drop the assembled junction into the gap in the existing drain, making sure it is a tight fit.

Slide the couplings out over the ceramic pipe ends and tighten the SS Bands.

Fit a plain 135° bend into the branch inlet to achieve the required 90°

Backfill



Plan view

Labels

(1 mark)

(1 mark)

**Total 6 Marks**

## ANSWER 10

(½ mark each)

1. Check that the pipe end is square.
2. Use a suitable tool to chamfer the end.
3. Mark the prepared spigot with the insertion depth required for the socket.
4. Check that the rubber ring is clean and in its correct position
5. Apply a suitable lubricant to the spigot end and the rubber ring.
6. Insert the spigot smoothly and in a straight line so that the ring is not dislodged, up to the witness mark.

**Total 3 Marks**

## ANSWER 11

(a) The Local Territorial Authority OR Regional Council

(b) The Resource Management Act

**Total 2 Marks**

## ANSWER 12

3 meters.

**Total 1 Mark**

### ANSWER 13

Any THREE (1 mark each)

1. Higher pressure rating.
2. Longer lengths.
3. Fewer joints needed.
4. Higher impact resistance.
5. More flexible.
6. Ability to pipe burst / thread.
7. Less prone to chemical attack.

**Total 3 Mark**

### ANSWER 14

(a) It is the absorbency of fluid in soils. (1 mark)

(b) mm/hr (1 mark)

**Total 2 Marks**

### ANSWER 15

Any FOUR (½ mark each)

- Drain camera (CCTV)
- Existing as-built plans
- Onsite features, such as terminal vent, gully traps, WC pans, inspection openings at the surface.
- Drainage spear
- Drain rods and cable locator

**Total 2 Marks**

### ANSWER 16

Any EIGHT (1 mark each)

1. Excavate to stable base.
2. Excavate to correct grade.
3. Box up base install rods pour the base.
4. Set concrete packers into the concrete surface at correct distance and finished gradient.
5. Install drain.
6. Install wing walls.
7. Check alignment and chock /pin the pipes into their correct location.
8. Pour the correct haunching.
9. Backfill and clean up.

**Total 8 Marks**

### ANSWER 17

- A Primary treatment chamber where anaerobic bacteria digests/liquefies the solid material scum can form and solids settle (3 marks)
- B Aeration Chamber and sometimes recirculation chamber/Aeration of effluent takes place (2 marks)
- C Pump Chamber/pumps effluent (1 mark)
- D Effluent disposal field/drip line to dispose of effluent or disposal field. Discharge to land. (2 marks)

**Total 8 Marks**

### ANSWER 18

Point Depth A 400mm

- B  $400 + 75 = 475$  mm (2 marks)
- C  $475 + 125 = 600$  mm (2 marks)
- D  $600 + 225 = 825$  mm (2 marks)
- E  $825 + 187.5 = 1012.5$  mm (2 marks)

**Total 8 Marks**

### ANSWER 19

Foul water section

Deduct marks for:

- No TV or too many TVs (1 mark)
- No gully trap (1 mark)
- No IO at boundary/sewer (1 mark)
- No IO at change direction (1 mark)
- NO IO at soil junctions (1 mark)
- IO on all junctions or  
Junctions to TV or GTs (1 mark)

Stormwater section

Show the minimum sized drain for the following:

- Branch drain serving downpipe 'A' 90mm (1 mark)
- Branch drain serving the Type 2 surface water sump 150mm (1 mark)
- Main drain from boundary to first branch drain 150mm (1 mark)  
(the same diameter as largest drain feeding into it)

Design complies with sound trade practice and is economical

- stormwater not going to sump
  - drains in proximity to building
  - drains in proximity to one another
- (3 marks)
- Drains run to correct connection points (1 mark)

**Total 13 Marks**

## Multiple choice answers

1. D B2
2. A 1.408 m.
3. D Greater than 20.0%.
4. B 3.000 m.
5. E 9 mm.
6. C 38
7. D 600 mm.
8. D 2.000 m.
9. D 60°
10. D 100 mm.
11. B 600 mm.
12. A Entry point must be sealed water tight.
13. C 350 mm.
14. A A grease trap.
15. D 700 litres.
16. B 100 litres.
17. C 1:60
18. E 75 mm.
19. B When the drain is serving waste water fixtures only.
20. B 10 m.
21. E 50 m.
22. B 2 m.
23. D 600 mm.