No. 9198

Plumbers, Gasfitters and Drainlayers Board

REGISTRATION EXAMINATION, JUNE 2017

CERTIFYING DRAINLAYER

ANSWER SCHEDULE

ANSWER 1

(a)

Category	Life expectancy	Component example
Easy to access and replace	5 years	As suitable
Moderately difficult to access and replace	15 years	As suitable
Difficult to access and replace	50 years	As suitable

(6 marks)

(b)
- Building Consent Authority.
- Owner or owner's agent. (2 marks)

Total 8 marks

ANSWER 2

(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 (2 marks)
- G14 – Industrial Liquid Waste.
- F3 – Hazardous Substances and Processes.
- B2 – Durability. (2 marks)

(c) Any ONE (1 mark)
- Must be seal-less or glandless.
- A remotely or automatically actuated shut-off valve must be installed in the pump inlet line.
- Self-priming.

(2 marks)

(d)
- Oil/petrol trap. (1 mark)

Total 10 marks

ANSWER 3

(a) Prevent scouring or erosion of the bottom of the pit. (1 mark)

(b) Any FOUR (½ mark each)
- Size.
- Lid.
- Filter cloth.
- Holes.
- Dimensions. (2 marks)

Total 3 marks

ANSWER 4

(a) Any TWO (1 mark each)
- Inhalation (breathing into the lungs).
- Ingestion (swallowing).
- Absorbed through the skin. (2 marks)

(b) Any TWO (1 mark each)
- Dermatitis.
- Breathing difficulties.
- Light-headedness.
- Eye damage. (2 marks)

(c)
- Gloves.
- Safety glasses. (1 mark)

Total 5 marks

ANSWER 5

(a)

Employee	Licensing category	Minimum period 'in the presence of'
New apprentice	Limited certificate (1 mark)	12 months (1 mark)
Unskilled labourer	Exemption under supervision (1 mark)	24 months (1 mark)
An ex-apprentice who has not passed the Licencing exam, within 12 months of receiving National Certificate	Any ONE (1 mark) Exemption under supervision Trainee limited certificate Journeyman	24 months (1 mark) 12 months 0 months

(6 marks)

(b)
- Direct
- General
- Broad (3 marks)

Total 9 marks

ANSWER 6

(a) Any ONE (1 mark)
- Soakage/percolation test.
- Drip test/constant head test.
- Soil absorption test. (1 mark)

(b)
- Bore test holes of 100 mm to 150 mm diameter to the depth of the proposed soak pit.
- Fill the hole with water and soak for at least 4 hours.
- Record the drop in water level against time, plot the drop in water level against time on a graph. (3 marks)

(c)
- The steeper the gradient of the site the quicker the water will run down, leaving less time for any surface water to soak in to the site. (2 marks)

(d)
- 0.85 + 0.05 = 0.90 (1 mark)

(e) Any ONE (1 mark)
- National Institute of Water & Atmospheric Research (NIWA)/High Intensity Rainfall Design System (HIRDS).
- Territorial Authority. (1 mark)

(f)
- Catchment area
- (28 × 12) + (18 × 5) = 426 m^2 (2 marks)
- Gisborne rainfall intensity from Appendix A = 70 (1 mark)
- Modified catchment area
  = 0.01 × 426 m^2 × 70 = 298.2 m^2 (1 mark)
- Diameter pipe required = 100 mm or 150 mm (1 mark)

(5 marks)

Total 13 marks

ANSWER 7

(a) Foul water section.
- Correct vent (1 mark)
- Correct ORG (1 mark)
- Correct IO (1 mark)
- Location of grease trap (1 mark)
- Correct fittings discharging to grease trap (1 mark)
- Drain attached to correct connection point (1 mark)

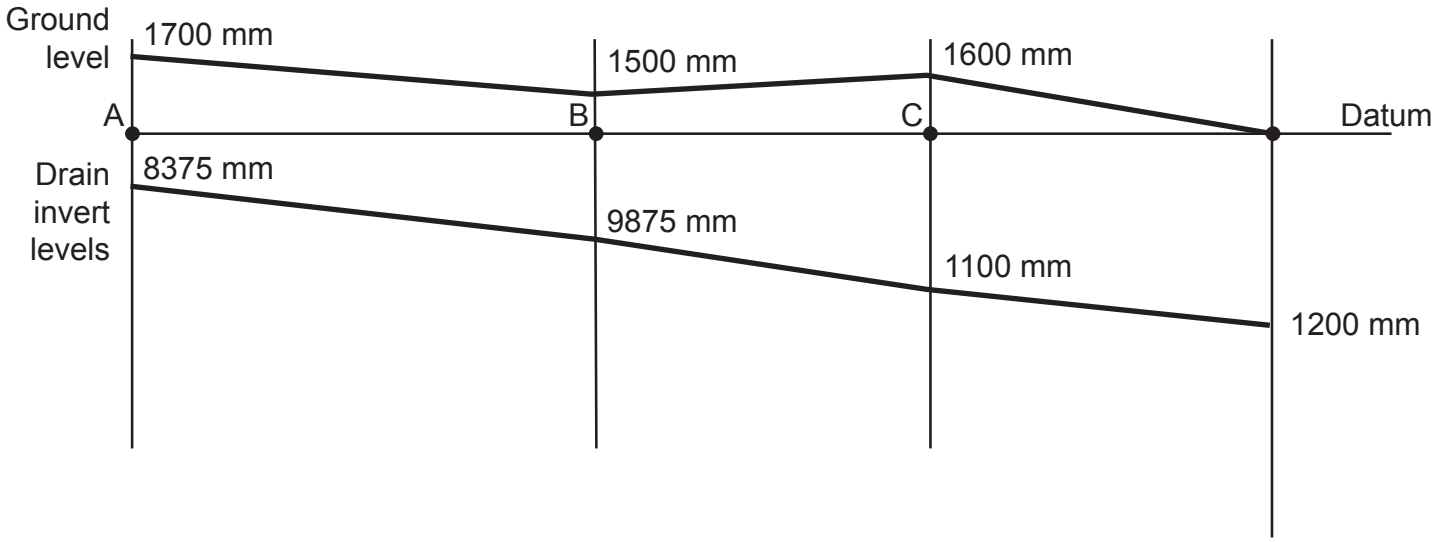
Surface water section.
- Branch drain to downpipe A shown as 90 mm (1 mark)
- Branch drain to type 2 sumps shown as 150 mm (1 mark)
- Main drain from boundary to first branch drain 150 mm (1 mark)
- Drain attached to correct connection point (1 mark)
- Design complies with trade practice and is economical (3 marks)

(13 marks)

(b)
- 175 × 5 = 875 litres (1 mark)

Total 14 marks

ANSWER 8



Ground levels are shown correctly. (4 marks)

Depths of drain invert below and datum shown correctly.

Depths of drain invert below ground shown correctly to correct scale. (8 marks)

Total 12 marks

ANSWER 9

(a) • The trap seal may be compromised as the water evaporates. (1 mark)

(b) • A flushing device or hose tap should be installed to manually keep the gully trap charged.
• Have relief pipes drain into the ORG.

(2 marks)

Total 3 marks

ANSWER 10

(a) Any TWO (1 mark each)
- Install dual flush toilet cisterns.
- Install flow restrictors/water reduction valves.
- Install water efficient sanitary appliances.
- Adjust sanitary fixture flow rates. (2 marks)

(b) Any TWO (1 mark each)
- Tip bucket.
- Flout dosing system.
- Syphon dosing system. (2 marks)

Total 6 marks

ANSWER 11

(a) The pump should switch off. (1 mark)

(b) An alarm within the property should be activated. (1 mark)

(c) The system makes the pumps work at alternate times. (1 mark)

(d) The second pump would start up and an alarm may be activated. (1 mark)

Total 4 marks

ANSWER 12

The diagram should include:

- a grate
- a sump for grit
- two other chambers
- venting
- separation between the chambers
- outlet at suitable level.

Total 6 marks

ANSWER 13

(a) Any safe method accepted – e.g. use a digger to lay pipe in the trench, resting and safely retrive. (1 mark)

(b) (i)
- Haunch the bedding.
- Add compacted granular bedding.
- A clean granular bedding or similar. (2 marks)

Total 3 marks

SECTION B

1. E 24 hours.
2. B 2.0
3 D 500 mm
4. D A trench that is 1500 mm deep and 1000 mm wide.
5. A 24 hours.
6. E 1000 mm.
7. B Drainlayer B.
8. D 500 mm.
9. A The person conducting a business undertaking (PCBU).
10. C If an accident occurred, the Code of Practice is used as an example of good work practice and if not followed could indicate negligence.
11. A 1:50 (2.00%).

Total 12 marks