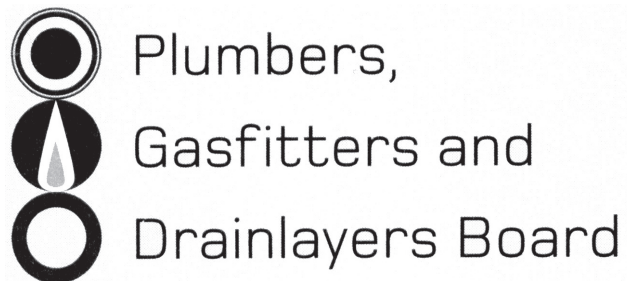


No. 9198



REGISTRATION EXAMINATION, JUNE 2021
CERTIFYING DRAINLAYER

ANSWER SCHEDULE

ANSWER 1

(a) Work that does not require a building consent. (1 mark)

(b) Any FOUR (1 mark each)

- Opening an existing access point to clear a blockage and resealing that access point.
- A kitchen benchtop is replaced and the kitchen sink is moved to an adjacent wall. The existing gully trap servicing the kitchen needs to be shifted a short distance to receive the discharge from the repositioned sink wastepipe.
- A toilet pan has been repositioned in an existing bathroom and it is reconnected into the existing drain at a different point.
- Installing a new access or rodding point for unblocking drains.
- A short extension to a storm-water drain to collect water from a new downpipe.
- Connecting a new gully trap on an existing drain to receive discharge from a redirected waste pipe.
- Sealing off a branch drain following the removal of sanitary fixtures from an outbuilding associated with a dwelling.
- Extending, for a short distance, the drain from a dwelling to connect to a new council sewer lateral installed at the boundary by the NUO due to the original lateral being damaged by tree roots (provided no new connections to a NUO system are made).

(4 marks)

(c) Any FOUR (1 mark each)

- Certifying drainlayer.
- Tradesman drainlayer.
- Journeyman drainlayer.
- Trainee drainlayer.
- Exempted person under supervision.
- Provisional drainlaying licence holder.

(4 marks)

Total 9 marks

ANSWER 2

(a) Any THREE (1 mark each)

- Rip Rap aprons.
- Stilling basins.
- Drop pools.
- Hydraulic jump basins.
- Baffled aprons.
- Impact energy dissipaters.
- Headwall with baffle blocks.
- Wing wall.

(3 marks)

(b) Any TWO (1 mark each)

- Lay the last section of pipe at as low a gradient as possible.
- Angle the pipe so that the entry into the waterway is less than 45°.
- Increase the diameter of the last section of pipe.

(2 marks)

Total 5 marks

ANSWER 3

- (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 4

- (a)
- Temporarily hold back discharge.
 - Release it in a controlled manner. (2 marks)
- (b)
- The drain outfall can only cope with a set amount. (1 mark)
- (c) Any TWO (1 mark each)
- Car parking areas.
 - Tanks.
 - Ponds.
 - Depression storage. (2 marks)
- (d) Any THREE (1 mark each)
- There is a means of holding the water (eg, tank, pond, car park).
 - There is a means of limiting outlet discharge flow rate.
 - The limiting mechanism could be a pipe with a small orifice or valve. (3 marks)

Total 8 marks

ANSWER 5

(a) Any THREE (1 mark each)

- Not designed for human occupation.
- Is large enough for a worker to enter and perform assigned work.
- Has limited entries and exits.
- May contain a hazardous atmosphere, arising from chemicals, sludge or sewage.
- Is constructed so that anyone who enters could be asphyxiated or trapped by walls or floor that converge to a small cross-section, such as a hopper.
- Contains a material such as sawdust or grain that could engulf anyone who enters.

(3 marks)

(b) Any TWO (1 mark each)

- Work where workers could fall 5 m or more.
- The erection or dismantling of scaffolds from which a person could fall 5 m or more.
- Every excavation which is more than 1.5 m deep and which is deeper than it is wide at the top.
- Any form of tunnel or drive where workers work underground, irrespective of timbering or support.
- Those excavations where the excavated face is steeper than 1 horizontal to 2 vertical.
- Any construction work where explosives are used or stored.
- Work such as diving, where construction workers breathe air or any other gas that has been compressed or is under pressure.
- Any construction work in connection with asbestos fibres.
- 'Restricted work' as defined by the Asbestos regulations.

(2 marks)

(c) WorkSafe.

(1 mark)

(d) • Address of work.

- Start date.
- Expected duration of work.
- Nature of the work.
- Contact details of person in charge.

(5 marks)

(e) • If it is necessary to deal with an emergency arising from damage caused by any earthquake, explosion, fire, flood, lightning, rain, slip, storm, or washout.

- The blockage or breakdown of any drain or sewer.
- The blockage or breakdown of any distribution system or network for electricity, gas, telecommunications, or water.

(1 mark)

Total 12 marks

ANSWER 6

(a)

Employee	Licence category	Minimum period 'in the presence of'
New apprentice	Trainee	12 months
Unskilled labourer	Exemption under supervision	24 months
An ex-apprentice who has not passed the Licencing exam, within 12 months of receiving National Certificate	Journeyman OR Exemption under supervision	0 for Journeyman 24 months for Exemption under supervision

(6 marks)

- (b)
- Direct.
 - General.
 - Broad.

(3 marks)

Total 9 marks

ANSWER 7

Volume = $4.75 \text{ m} \times 0.9 \text{ m} \times 1.4 \text{ m}$
 = 5.985 m^3

(1 mark)

= $5.985 \text{ m}^3 \times 1000 = 5985 \text{ litres}$

(1 mark)

Time = $5985 \div 60$
 = 99.75 minutes

(1 mark)

Total 3 marks

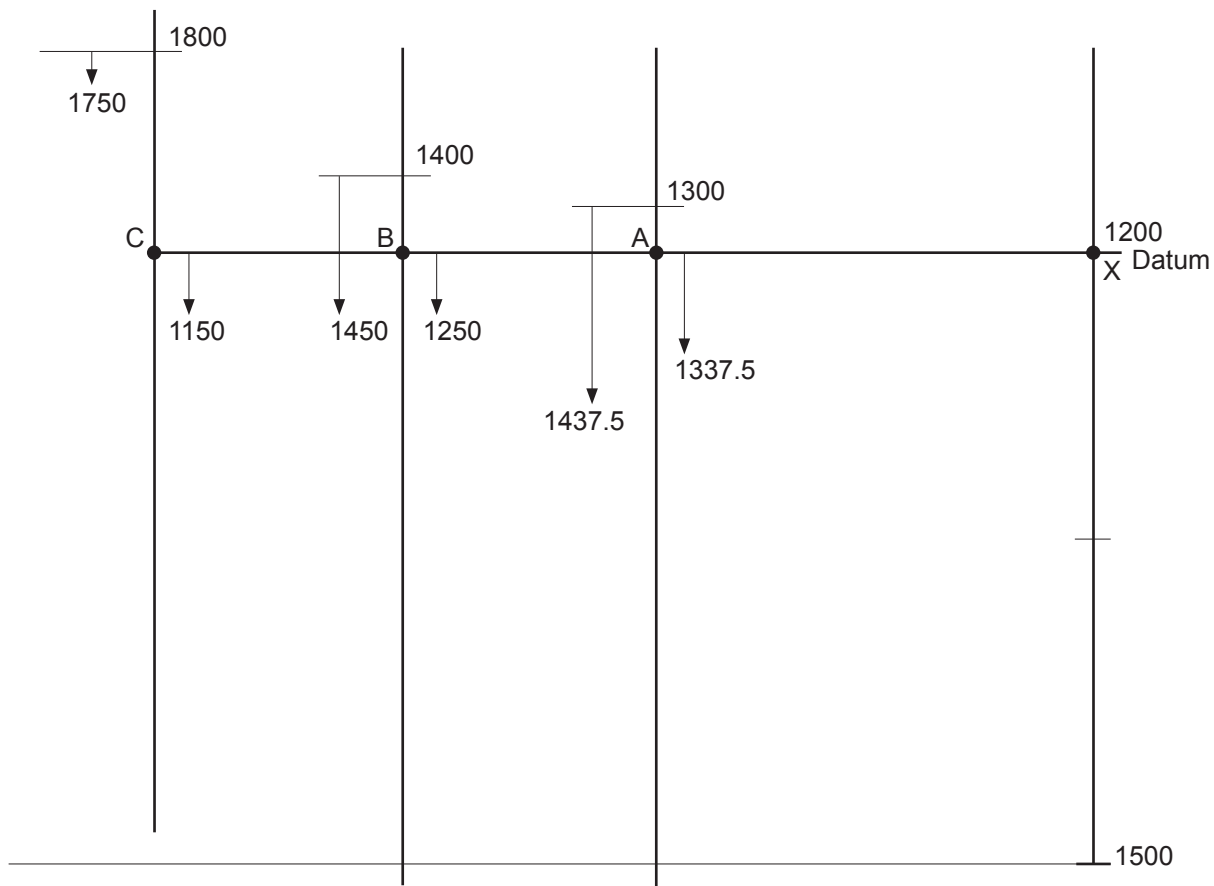
ANSWER 8

(a)

Length of pipe sections		
Pipe section	Distance	Fall
X - A	13 metres	162 mm
A - B	7 metres	37.5 mm
B - C	8 metres	100 mm

(1 mark each fall)

- (b) (i) The ground levels. (3 marks)
- (ii) The depth of the drain invert below the datum. (3 marks)
- (iii) The depth of the drain invert below the ground. (3 marks)



Plotting scale correct (3 marks)

(9 marks)

Total 12 marks

ANSWER 9

(a) Diagram to show:

Vents at A

No vent at B

Vent at C

No vent at D

No vent at E

No vent at F if 100 mm diameter, vented if 80 mm diameter)

OR other options.

(5 marks)

(b)

Drain	Minimum diameter	Minimum gradient
A	100 mm	1.65% or 1:60
B	80 mm	1.65% or 1:60
C	100 mm	1.65% or 1:60
D	65 mm	2.5% or 1:40
E	65 mm	2.5% or 1:40
F	80 mm if vent at A 100 mm if no vent at A	1.65% or 1:60

(6 marks)

Total 11 marks

ANSWER 10

(a) Any SIX (1 mark each)

- Harmful solids and material which can combine with water to form a cemented mass.
- Oils, fats, grease.
- Paint.
- Liquid containing asbestos.
- Flammable or explosive material.
- Genetic wastes.
- Medical wastes.
- Highly radioactive material.
- Waste containing toxic materials such as cyanide or arsenic.
- Pesticides.
- Chlorine.
- Organic waste.

(3 marks)

(b) Any THREE (1 mark each)

- Settling.
- Intercepting traps.
- Neutralizing.
- Grease arrestors.
- Dilution systems.
- Cooling systems.

(3 marks)

Total 6 marks

ANSWER 11

- (a) Diagram to show:
- ORG (1 mark)
 - Vent (1 mark)
 - 3× inspection points (3 marks)
- (b)
- Contour (2 marks)
 - Distribution box (1 mark)
 - Dosing system. (2 marks)
- (c) Drawing to show:
- Pipe cover
 - Effluent pipe
 - Drainage material (1 mark)
- (d)
- The effluent is stored.
 - The effluent is released in large doses to an effluent field.
 - The effluent is released to the same field later or to another field. (2 marks)

Total 13 marks

SECTION B

1. B 1.435 m.
2. E 2.5 m.
3. C A drain that serves two or more properties.
4. D To stop the waste cooling and fats solidifying on the internal wall of the pipe.
5. A 1:50 (2.00%).
6. C The sludge, scum and effluent separating while in the septic tank.
7. C 15 years.
8. B 1:120
9. B 175 mm.
10. B 10 m².

Total 10 marks

