No. 9198

Plumbers,
Gasfitters and
Drainlayers Board

REGISTRATION EXAMINATION, NOVEMBER 2013

CERTIFYING DRAINLAYER

ANSWER SCHEDULE

ANSWER 1

(a) Surface water that overflows from a drainage system. (1 mark)

(b)
- The rainfall volume for a site.
- The flow capacity of the surface water drainage system
- The potential water level if the surface water cannot discharge through the system and backs up.
- The surrounding ground level (will the excess water be caught until it can travel through the system or will it overflow and bypass the system?).

(4 marks)

Total 5 marks

ANSWER 2

(a)

Point	Access Type Required		
X	None	**Rodding point**	Chamber
A	**None**	Rodding point	Chamber
B	None	**Rodding point**	Chamber
C	**None**	Rodding point	Chamber
D	None	Rodding point	**Chamber**
E	**None**	Rodding point	Chamber
F	None	**Rodding point**	Chamber
G	None	Rodding point	**Chamber**
H	**None**	Rodding point	Chamber
J	**None**	Rodding point	Chamber
K	**None**	Rodding point	Chamber
L	**None**	Rodding point	Chamber
M	None	**Rodding point**	Chamber
N	None	Rodding point	**Chamber**

(½ mark each line), (7 marks)

(b) Point D. (1 mark)

Total 8 marks

ANSWER 3

(a) 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)

(b) 0.85 + 0.05 = 0.90 (1 mark)

Total 3 marks

ANSWER 4

(a) To prevent the water entering the soak pit from scouring the base and undermining the chamber.
(1 mark)

(b) Any FOUR (½ mark each)
- Must have a hinged or removable grate.
- The grate must have 35% openings.
- No opening can be larger than 35 mm.
- Must provide space for sediment to collect at the bottom.
- Must prevent floatables entering the drain. (2 marks)

Total 3 marks

ANSWER 5

2 × 250 × 50 = 25000 ml (2 marks)
25000 / 1000 = 25 litres/hr (12.5 litres in 30 minutes) (1 mark)

Total 3 marks

ANSWER 6

Catchment area
(9 × 9) + (18 × 20) = 441 m^2 (1 mark)
Timaru Rain fall intensity from Appendix A = 45 (1 mark)
Modified catchment area
0.01 × 441 m^2 × 45 = 198.45 m^2 (1 mark)
Diameter pipe required = 100 mm (1 mark)

Total 4 marks

ANSWER 7

Alterations to kitchen area. (2 marks)
Removing branch to WC (2 marks)
New WC in bathroom (2 marks)
New WC in new cubicle (2 marks)

Total 10 marks

ANSWER 8

(a) Any FOUR (1 mark each)

- Install a front loading washing machine instead of a top loader.
- Remove the bath from the installation/replace with a shower.
- Remove the waste disposal unit.
- Install a low water use dishwasher.
- Install dual flush toilet cisterns.
- Install flow restrictors/ water reduction valves. (4 marks)

(b) Any TWO (1 mark each)

- Tip bucket.
- Flout dosing system.
- Siphon dosing system. (2 marks)

(c) Any SIX (1 mark each)

- Land area m^2.
- Proximity of water ways.
- Location of bores/wells.
- Water table level.
- Short circuit paths.
- House and boundary location.
- Plantings/ vegetable gardens etc.
- Location of retaining walls/embankments.
- Topography of the land (contour lines). (6 marks)

(d) Any FOUR (½ mark each)

- The house drain between the gully and the septic tank is blocked.
- The septic tank requires emptying.
- The filter on the outlet of the septic tank is blocked.
- The pumping system has failed (no power, worn impellor etc).
- The effluent disposal field has failed. (2 marks)

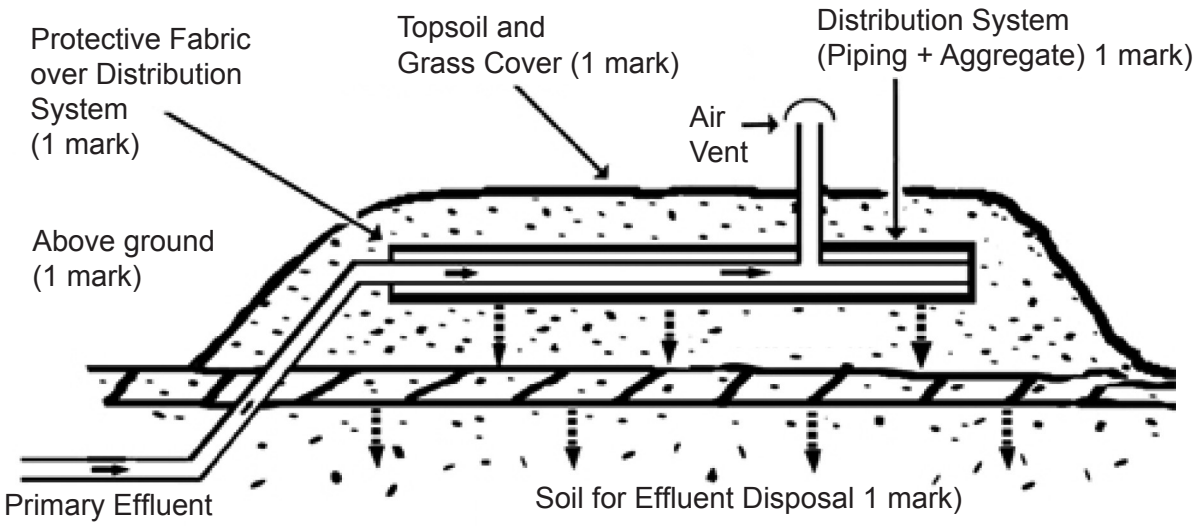
Total 14 marks

ANSWER 9

(a) Any ONE (1 mark)

- When the ground has poor drainage.
- High water table. (1 mark)

(b)



(5 marks)

(c) Any THREE (1 mark each)

- Make sure any plants in the area are suitable.
- Do not allow stock or heavy machinery/vehicles to have access to the mounds.
- Have the septic tank pumped out regularly.
- Do not flush unsuitable products into the system.
- Ensure surface water is diverted from the mound.
- Clean filters regularly. (3 marks)

Total 9 marks

ANSWER 10

(a) Any TWO:

- A potential hazard has been identified.
- The hazard has been eliminated, isolated or minimised. (2 marks)

(b)

- So that a professional can assess the effects of a health hazard.
- To allow early remedial action to be put in place for the employee's benefit and prevent further harm. (2 marks)

(c) Any FOUR:

- A description of the hazard and possible outcome.
- A description of how it can cause harm to the employee, including maximum exposure levels and the number of times they will be exposed to the hazard.
- Any other information arising from the monitoring.
- Only their health in relation to the specific hazard is to be monitored.
- Any information will be treated in confidence.
- The results of the monitoring will be made available to them.
- Health monitoring may be of benefit in the prevention of harm to other employees.

(4 marks)

Total 8 marks

ANSWER 11

(a) Waste that cannot be discharged to the network utility operator's sewer system. (1 mark)

(b) Waste that must be treated before it can be disposed of to the network utility operator's system. (1 mark)

(c) Waste that does not require treatment and can be disposed of directly to the network utility operator's system. (1 mark)

Total 3 marks

ANSWER 12

Drawing to show: Any EIGHT (1 mark each):

- Two pumps.
- Disconnection points for pumps.
- Chain to lift pumps.
- Pump on switch.
- Pump off switch.
- Alarm level switch.
- Non-return valves.
- Isolation valves.
- Inlet.
- Vent

Total 8 marks

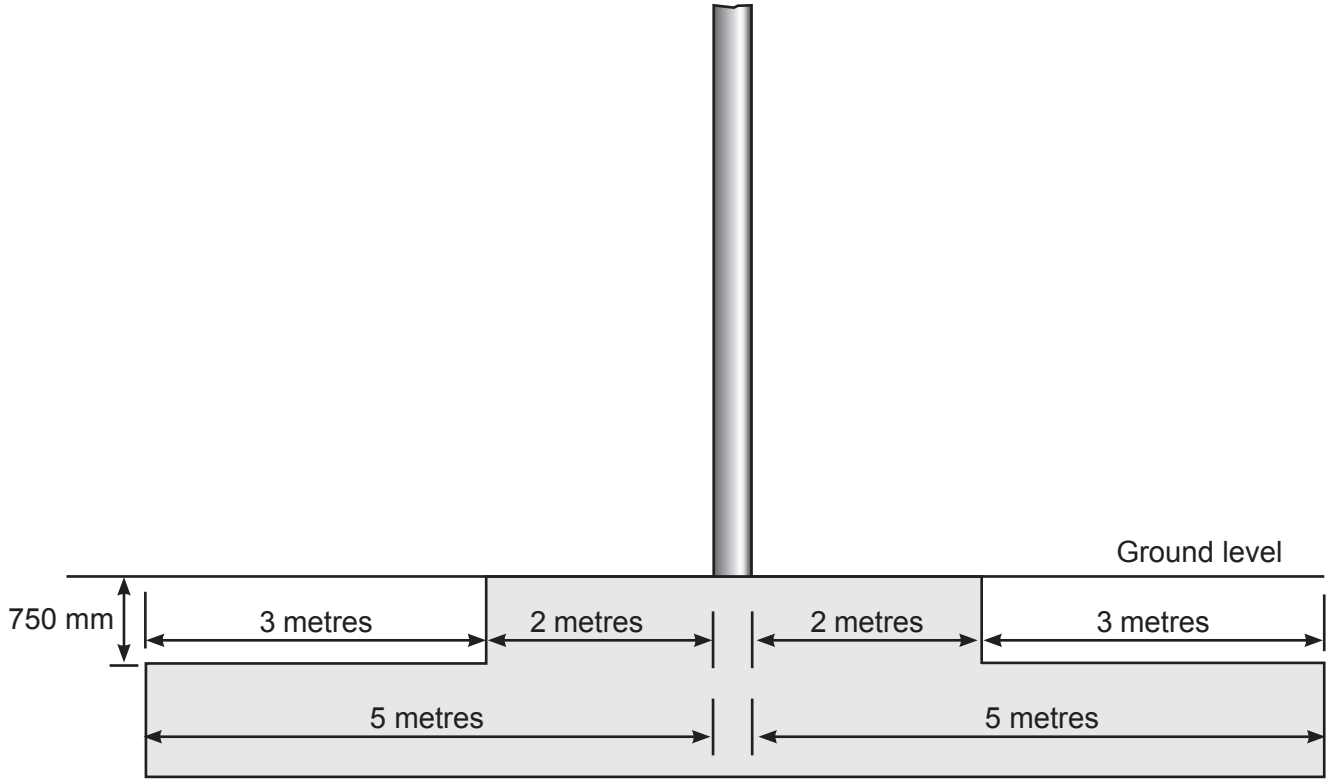
ANSWER 13

Depth of invert of drain	
Point	Depth
A	955 mm
B	885 mm
C	866 mm
D	790 mm
F	810 mm

(2 marks each)

Total 10 marks

ANSWER 14



Measurements correct (3 marks)
Correct scale (1 mark)

Total 4 marks

SECTION B

1 B Drainlayer B.
2 A To recover plant and equipment from the site.
3 B 12 months.
4 B Hum detectors.
5 C Telecommunications.
6 D 500 mm
7 E 450 litres
8 E 3.0 metres

Total 8 marks