

Affix label with Candidate Code
Number here.
If no label, enter candidate
Number if known

No. 9197



Plumbers,
Gasfitters and
Drainlayers Board

REGISTRATION EXAMINATION, JUNE 2007

DRAINLAYING

QUESTION AND ANSWER BOOKLET

Time allowed THREE hours

INSTRUCTIONS

Check that the Candidate Code Number on your admission slip is the same as the number on the label at the top of this page.

Do not start writing until you are told to do so by the Supervisor.

Total marks for this examination: 100.

The pass mark for this examination is 60 marks.

Write your answers and draw your sketches in this booklet. If you need more paper, ask the Supervisor for extra sheets. Write your Candidate Code Number and the number 9197 on any extra sheets used, and attach them to this booklet. **NO SEPARATE ANSWER BOOKLET IS TO BE USED.** Write the number of extra sheets used in the box on the last page of this booklet. Write NIL if you have not used any.

All working in calculations must be shown.

Candidates are permitted to use the following in this examination:

Drawing instruments, approved calculators

The following are NOT permitted in the examination room:

Any publications, Acts, Regulations, Codes of Practice, or Standards

Check that this booklet has all of 17 pages in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION

QUESTION 1

(a) A drainlayer goes to a local authority to get information on a sewer connection.

State TWO items of information the drainlayer would expect to receive on the plan provided.

- 1 _____

- 2 _____

(2 marks)

(b) List FOUR relevant points that should be shown on a drainage profile (longitudinal sectional view).

- 1 _____
- 2 _____
- 3 _____
- 4 _____

(4 marks)

(c) State TWO relevant factors that must be considered when laying a drainage system on an undulating site.

- 1 _____

- 2 _____

(2 marks)

QUESTION 1 (cont'd)

(d) Define each of the following terms.

(i) 1:100 scale

(1 mark)

(ii) 1 in 60 fall

(1 mark)

(iii) Reduced level

(1 mark)

(iv) Invert level

(1 mark)

Total 12 marks

QUESTION 2

(a) In relation to trench excavation, explain what is meant by the term safe slope.

(1 mark)

(b) State a minimum safety precaution that should be taken when machinery (eg. a digger) has been used on site and is standing idle.

(1 mark)

(c) List FOUR methods of preventing trench wall collapse while workers are working in the trench.

1

2

3

4

(4 marks)

(d) Name a safety device that should always be used with portable electrical equipment.

(1 mark)

(e) State the meaning of the following symbol on a portable electrical drill.



(1 mark)

QUESTION 2 (cont'd)

(f) State the purpose of cardiac pulmonary resuscitation (CPR).

(1 mark)

(g) State the THREE common immunisation precautions that should be taken by a drainlayer.

1

2

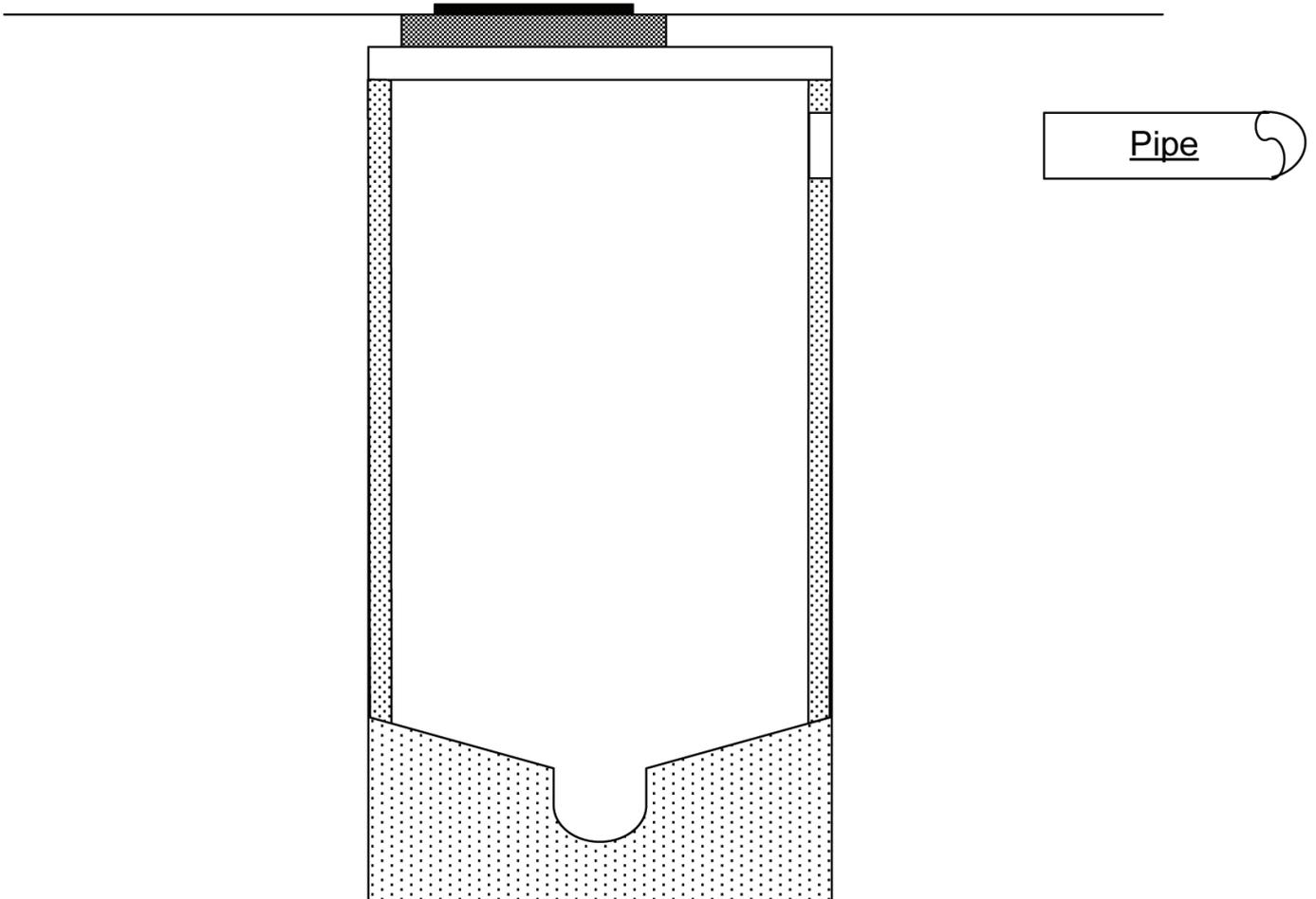
3

(3 marks)

Total 12 marks

QUESTION 3

Complete the starter sketch and label main component parts associated with a jump up installed inside an inspection chamber discharging to an open channel to comply with AS/NZS 3500.2. Include all fittings and components both adjacent to and within the chamber.



Total 5 marks

QUESTION 4

(a) Describe a septic tank and state its purpose.

(3 marks)

(b) Explain what is known as the cascade level in a septic tank.

(1 mark)

(c) Explain the purpose of a sullage tank.

(1 mark)

(d) While installing a septic tank at a house under construction, a drainlayer discovers that the water table is high. State what action the drainlayer should take to ensure that the installation remains as laid.

(1 mark)

QUESTION 4 (cont'd)

(e) Define the term absorption test.

(2 marks)

Total 8 marks

QUESTION 5

(a) AS/NZ 3500.0 Glossary of terms gives a full definition of the term 'Work of Drainlaying'. State what this definition covers.

(4 marks)

(b) Give TWO reasons why it is important to ensure that a sewer drain has leak-proof joints.

1

2

(2 marks)

(c) Define the following tests for drainage systems.

(i) Hydrostatic test

(1 mark)

(ii) Dye test

(1 mark)

QUESTION 5 (cont'd)

(d) When a drain or part of a drain is no longer required, it shall be disconnected from the foul water drainage system.

(i) State the position where the drain must be disconnected.

(1 mark)

(ii) State what the Drainlayer must use to seal this disconnection.

(1 mark)

(iii) State TWO effects that the unsatisfactory disconnection of old branch drains from live drains may have on the drainage system.

1

2

(2 marks)

(e) (i) State TWO functions of gullies in relation to a foul water drainage system.

1

2

(2 marks)

QUESTION 5 (cont'd)

(ii) State TWO locations where an overflow relief gully shall be installed.

1 _____

2 _____

(2 marks)

(iii) State the maximum height for the riser to a gully trap.

(1 mark)

(iv) State the TWO points from where the gully trap riser measurements are taken.

1 _____

2 _____

(1 mark)

Total 18 marks

QUESTION 6

- (a) Calculate the amount of material required to fill a trench having the following dimensions; 130 m long x 0.600 m wide with a depth of 0.820 m at the top end of the trench and 1.650 m at the bottom end.
Your answer should include an allowance of 25% for compaction.
Show all workings.

(5 marks)

- (b) A trench 65 m long and 650 mm wide requires an extra 100 mm under the drain for base course. Calculate the amount of base course required, allowing 30% extra for compaction.
Show all workings.

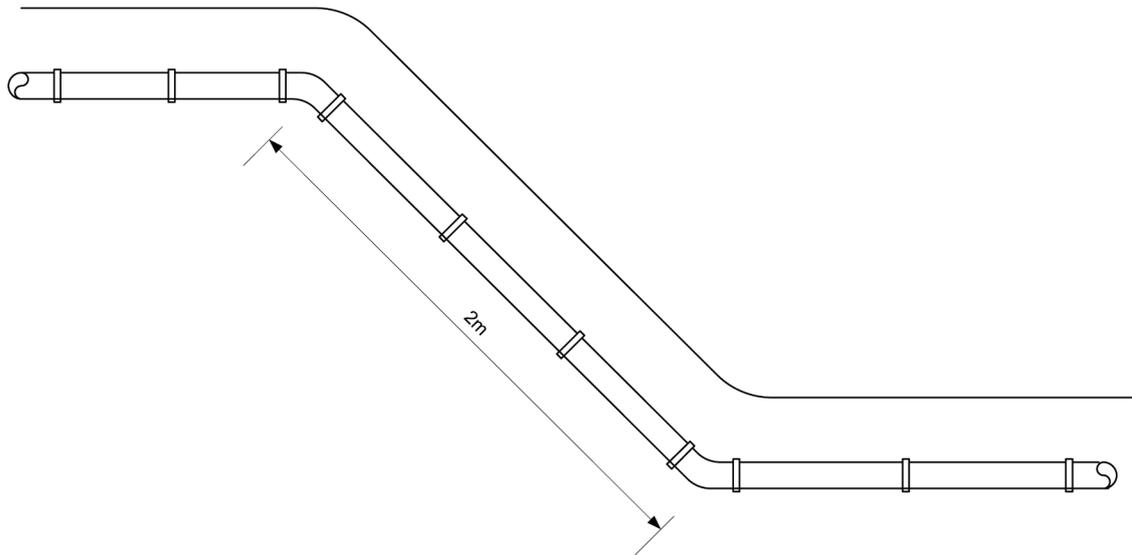
(3 marks)

Total 8 marks

QUESTION 7

(a) Drains up to DN 150 mm laid on a grade between 20% (1 in 5) and vertical require anchor blocks (thrust blocks) to be installed. They shall be of reinforced concrete.

(i) On the following elevation, draw in relevant anchor blocks (thrust blocks). Label and include all measurements, reinforcement, position and profile associated with the anchor blocks (thrust blocks).



(3 marks)

(ii) State how the anchor blocks are positioned in the trench.

(1 mark)

(b) State the type of joint that anchor blocks must not cover.

(1 mark)

(c) State the maximum distance between anchor blocks which are being installed on an inclined drain.

(1 mark)

Total 6 marks

QUESTION 8

(a) In relation to drainlaying define the following terms.

(i) Main drain

(2 marks)

(ii) Sullage

(1 mark)

(iii) Infiltration

(1 mark)

(iv) Outfall

(1 mark)

(v) Surcharge (sanitary)

(1 mark)

QUESTION 8 (cont'd)

(vi) Access chamber

(1 mark)

(b) State TWO purposes of a sewer gas interceptor trap.

1

2

(2 marks)

(c) State where measurements are taken to find the developed length of a drainage system, and what these measurements include.

(1 mark)

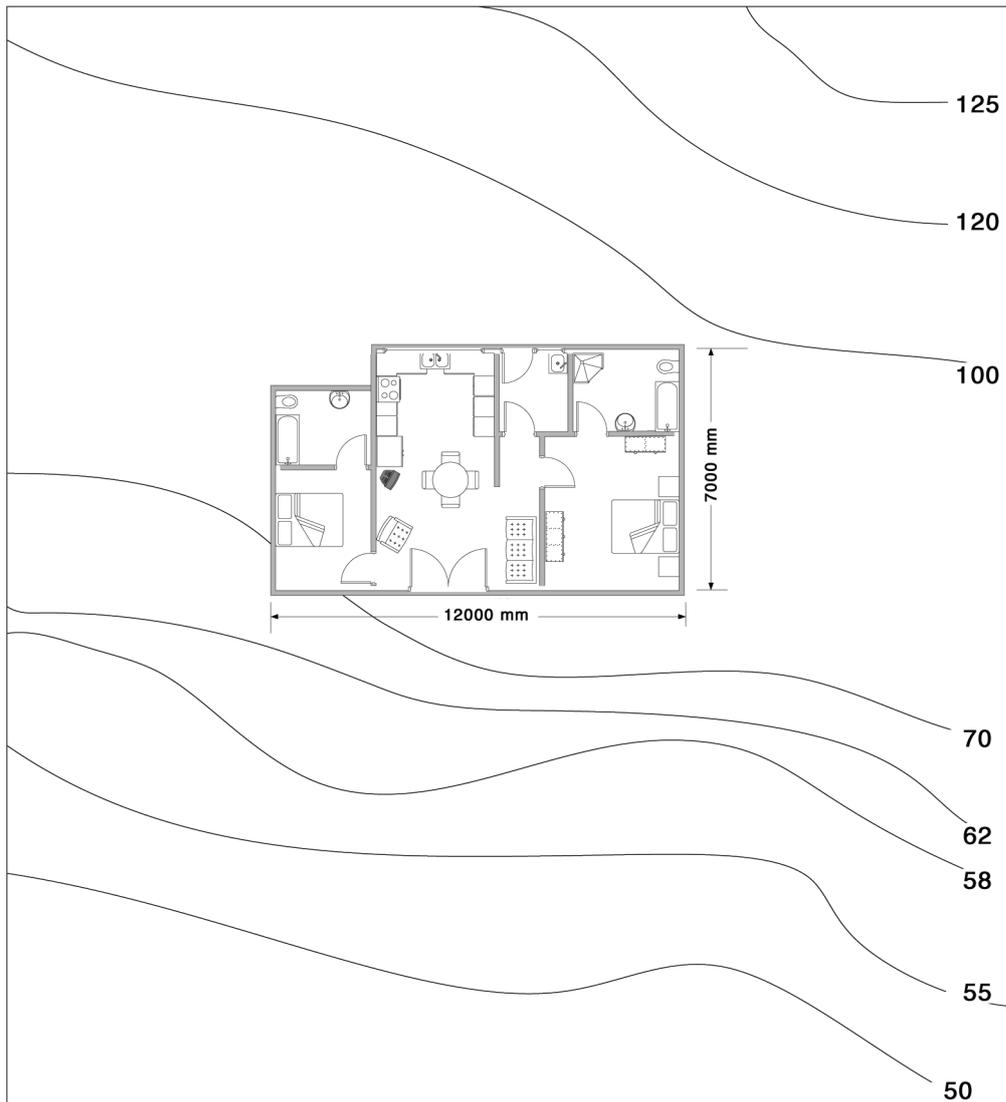
Total 10 marks

QUESTION 9

On the plan provided, draw the house drainage system (foul water) for a typical single stage septic tank.

The system is to include a septic tank, a distribution box, two separate absorption trenches (effluent disposal), pipe work, bends, junctions, fittings, inspections and ventilation.

Each absorption trench is to be approximately 20 metres long.



Total 10 marks

QUESTION 10

(a) State FOUR requirements to be met to become a registered drainlayer.

1 _____

2 _____

3 _____

4 _____

(4 marks)

(b) State the course of action that is available to a drainlayer if he or she feels that they have been unfairly dealt with by the Plumbers, Gasfitters and Drainlayers Board following a disciplinary procedure.

(3 marks)

QUESTION 10 (cont'd)

(c) Name the THREE clause titles and numbers contained in the New Zealand Building Code that relate to drainlaying.

1 _____

2 _____

3 _____

(3 marks)

(d) Name the Act that governs safety in the workplace.

(1 mark)

Total 11 marks

For Candidate's use

Number of EXTRA sheets used (write NIL if none have been used).	
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For Examiner's use only

Questions Answered	Marks	Marks
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
Total		