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

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No. 9197

Plumbers, Gasfitters and Drainlayers Board

REGISTRATION EXAMINATION, 2006

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 l9 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) Explain why it is undesirable to discharge storm water into a foul water sewer.

_____

(1 mark)

(b) What is trade waste?

_____

_____

_____

(1 mark)

(c) Name TWO special purpose interceptor traps.

1 _____

2 _____

(1 mark)

(d) What TWO factors determine the size of a grease trap?

1 _____

2 _____

(1 mark)

(e) State the purpose of a drain vent pipe.

_____

_____

(1 mark)

(f) State FOUR adverse effects to the operation of a drainage system if it is not adequately ventilated.

1 _____

2 _____

3 _____

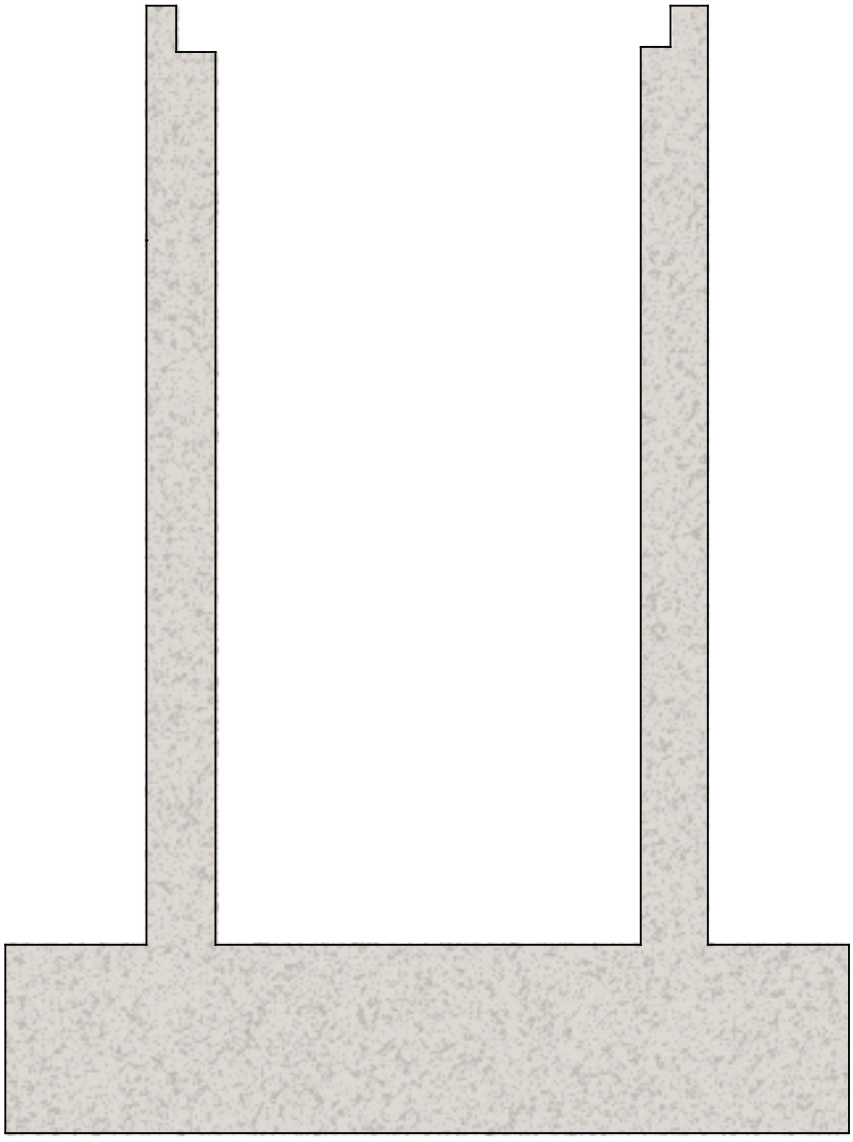
4 _____

(2 marks)

Total 7 marks

QUESTION 2

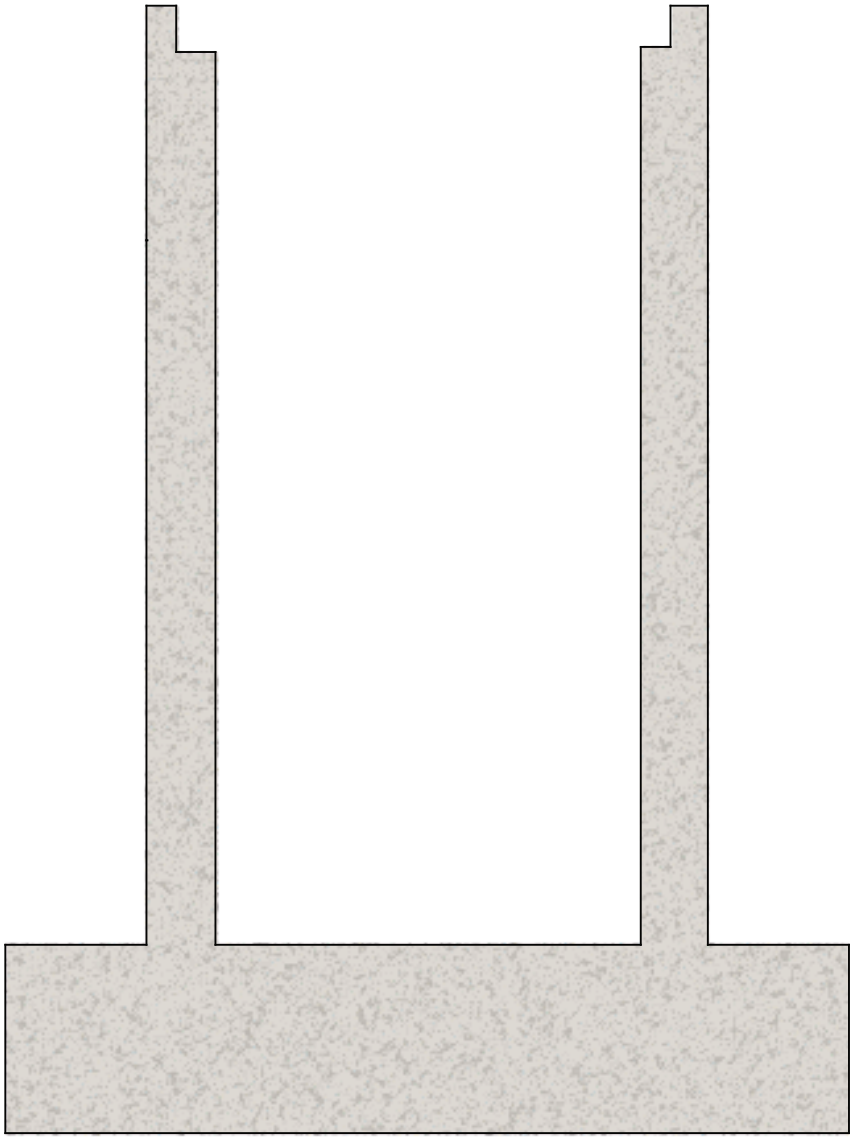
(a) Sketch and name the components of a wet inspection chamber, showing the FOUR main parts.



(4 marks)

QUESTION 2 (cont'd)

(b) Sketch and name the components a dry inspection chamber, showing the FIVE main parts.



(5 marks)

QUESTION 2 (cont'd)

(c) Give TWO differences between a wet inspection chamber and a dry inspection chamber.

1 _____

_____

_____

2 _____

_____

_____

(2 marks)

Total 11 marks

QUESTION 3

(a) List SIX positions where access must be provided in a drainage system.

1 _____

_____

2 _____

_____

3 _____

_____

4 _____

_____

5 _____

_____

6 _____

_____

(3 marks)

(b) State the minimum clearance that must be provided around a drain that is required to go through a concrete foundation.

_____

(1 mark)

(c) Give TWO reasons why lateral support of a drain is important.

1 _____

_____

2 _____

_____

(2 marks)

QUESTION 3 (cont'd)

(d) Give FIVE situations where a drain may need extra protection against damage.

1 _____

_____

2 _____

_____

3 _____

_____

4 _____

_____

5 _____

_____

(5 marks)

(e) State FOUR functions of gully traps.

1 _____

_____

2 _____

_____

3 _____

_____

4 _____

_____

(2 marks)

QUESTION 3 (cont'd)

(f) State THREE requirements that a gully dish and grate should meet when installed in accordance with NZBC G13-AS2

1 _____

_____

2 _____

_____

3 _____

_____

(3 marks)

(g) When a sewer is likely to surcharge, what TWO precautions should be taken to avoid having the drain overflow into a property?

1 _____

_____

2 _____

_____

(2 marks)

Total 18 marks

QUESTION 4

(a) State the purpose of a rodding point.

_____

(1 mark)

(b) What extra provision would be required if a rodding point were to be installed within a building envelope rather than outside the building?

_____

(1 mark)

(c) Draw a side elevation of a rodding point as it would be connected to a drain. Label the main components and give the maximum depth.

(3 marks)

Total 5 marks

QUESTION 5

(a) Using your knowledge of **EITHER** NZBC acceptable solutions **OR** AS/NZS 3500.2, answer the following questions. Select ONE method of compliance. Using this method, write your answer for the SIX questions in the correct column.

COMPLETE ONE COLUMN ONLY

		NZBC	ASNZS3500
1	Minimum cover over a drain under a driveway		
2	Maximum depth of a gully trap		
3	Maximum gradient of a 100mm drain		
4	Maximum gradient of 150mm drain		
5	Maximum length of a branch drain without a drain vent		
6	Maximum length of a branch drain to a gully without an inspection junction		

(6 marks)

(b) List FOUR examples of drainlaying work that would be notifiable.

1 _____

_____

2 _____

_____

3 _____

_____

4 _____

_____

(4 marks)

QUESTION 5 (cont'd)

(c) List TEN items that would become part of a safety checklist for a deep excavation.

1 _____

_____

2 _____

_____

3 _____

_____

4 _____

_____

5 _____

_____

6 _____

_____

7 _____

_____

8 _____

_____

9 _____

_____

10 _____

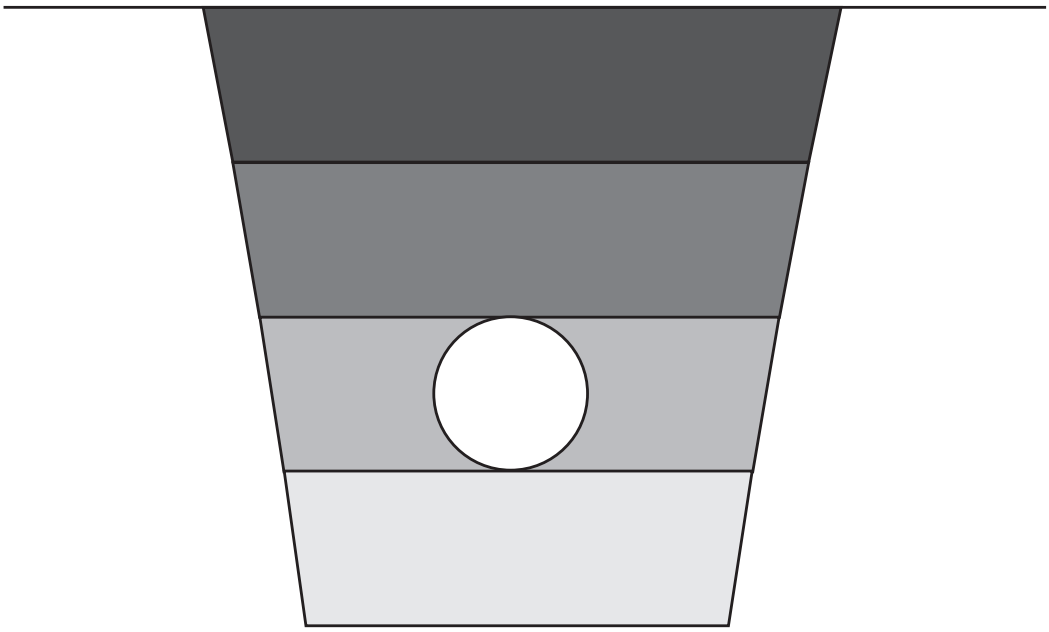
_____

(10 marks)

Total 20 marks

QUESTION 6

A drain, located in open country, is laid in ordinary fill with cover of 400mm. Label the drawing with the minimum installation measurements.

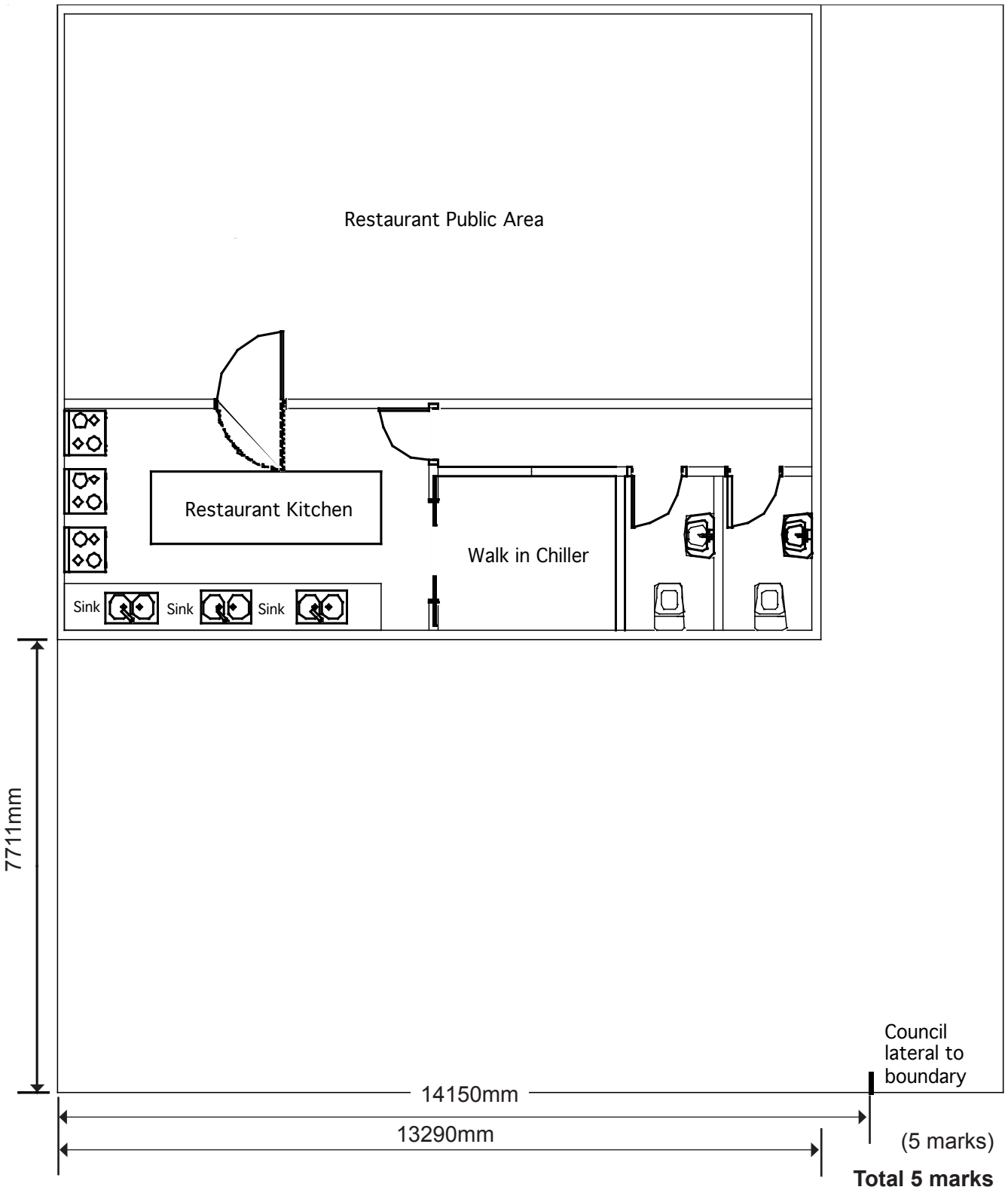


(3 marks)

Total 3 marks

QUESTION 7

Sketch and label the foul water drains required for the building shown.



(5 marks)

Total 5 marks

QUESTION 8

Calculate the amount of material required to fill a trench having the following dimensions:
125 m long × 0.725 m wide with a depth of 0.720 m at the top end of the trench
and 1.735 m at the bottom

Your answer should include an allowance of 34% for compaction.
(Show ALL working.)

Formula: Volume = Length × Width × average depth

(5 marks)

Total 5 marks

QUESTION 9

Draw and label a petrol trap used to prevent petrol from entering drainage systems.

Total 5 marks

QUESTION 10

Draw and label a silt trap used to prevent extraneous matter entering drainage systems.

(4 marks)

Total 4 marks

QUESTION 11

(a) You are called to a residence with a blocked foul water drain. You discover the property has a conventional septic tank and effluent disposal system. The septic tank has recently been cleaned out. You note the water level is up high in the square junction. You plunge the square junction at the septic tank and the level remains above the inlet drain level.

Give TWO possible causes of the blockage in the foul water drain.

1 _____

_____

2 _____

_____

(2 marks)

(b) While installing a septic tank at a house under construction you discover during the installation that the water table is high. State what action you would take to ensure that the installation remains as laid.

_____

(1 mark)

(c) Explain what is meant by the term dewatering.

_____

(1 mark)

(d) Name TWO ways of dewatering excavations.

1 _____

_____

2 _____

_____

(1 mark)

(e) What is the purpose of well pointing?

_____

(1 mark)

QUESTION 11 (cont'd)

(f) Explain the following terms:

1 Datum level

2 Invert level

3 Water table

4 Porosity of soil

5 Compaction

6 Bedding

(3 marks)

Total 9 marks

QUESTION 12

(a) You run a drainlaying business and have decided to employ a trainee. Describe your legal responsibilities concerning limited certificates for the duration of the training period as they relate to the Plumbers, Gasfitters and Drainlayers Act 1976 and its amendments.

(4 marks)

(b) Suppose a registered drainlayer is found guilty of an offence under the Plumbers Gasfitters and Drainlayers Act 1976 by the Plumbers Gasfitters and Drainlayers Board (PGDB). State FOUR disciplinary actions the PGDB can take against the drainlayer.

1

2

3

4

(4 marks)

Total 8 marks

For Candidate's use

Number of EXTRA sheets used (write NIL if none have been used).	

For Examiner's use only

Questions Answered	Marks
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
Total	