

Affix label with Candidate Code
Number here.
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Number if known

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No. 9196



Plumbers,
Gasfitters and
Drainlayers Board

REGISTRATION EXAMINATION, NOVEMBER 2012

CERTIFYING GASFITTER

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, use pages 19–21 at the back of this booklet. Clearly write the question number(s) if any of these pages are used.

All working in calculations must be shown.

Candidates are permitted to use the following in this examination:

Drawing instruments, approved calculators, document(s) provided.

Publications, Acts, Regulations, Codes of Practice, or Standards other than the ones provided are NOT permitted in the examination room.

Check that this booklet has all of 21 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

Candidates that sat this examination in November 2012 were provided with the following documents:

- AS/NZS 5601 Part 1: General installations

SECTION A

QUESTION 1

(a) Employers have a legal obligation to induct new employees.

List FOUR topics employee induction should cover.

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

(2 marks)

(b) Name the THREE licensing categories that must be supervised or have their work verified by a licensed certifying gasfitter.

- 1 _____
- 2 _____
- 3 _____

(3 marks)

Total 5 marks

QUESTION 2

(a) Answer the following with regard to Notifiable Work.

(i) State who is to be notified.

(1 mark)

(ii) State how long before work commences must a notification form be sent.

(1 mark)

(iii) Give a situation where notifiable work may be performed prior to sending the notification form.

(1 mark)

(b) List FIVE types of work that are defined as notifiable work.

1

2

3

4

5

(5 marks)

Total 8 marks

QUESTION 3

Answer the following questions according to the Health and Safety in Employment Act.

(a) State the purpose of an employee participation system.

(1 mark)

(b) Describe the conditions under which an employee participation system is required.

(1 mark)

(c) List THREE formal documents a health and safety inspector may issue if safety concerns are found on a work site.

1

2

3

(3 marks)

Total 5 marks

QUESTION 4

(a) A building may have active and passive fire protection in place.

(i) Give an example of active fire protection.

(1 mark)

(ii) Give an example of passive fire protection.

(1 mark)

(b) Draw and label a cross-sectional view of a pipe penetration through a hollow construction wall fitted with fire collars.

(4 marks)

QUESTION 4 (cont'd)

(c) Describe what intumescent material does.

(1 mark)

Total 7 marks

QUESTION 5

Give TWO purposes of a wall cavity between a building frame and the external wall cladding.

- 1 _____

- 2 _____

Total 2 marks

QUESTION 6

Give TWO factors that would deem a work situation to be a confined space.

- 1 _____

- 2 _____

Total 2 marks

QUESTION 7

(a) State the special requirements in regard to identification of a proprietary piping installation.

(2 marks)

(b) State the purpose of a reversion fitting.

(1 mark)

(c) List TWO pipe or fitting types a reversion fitting must revert to.

1

2

(1 mark)

(d) Reversion fittings are required to be installed in a proprietary multi-layered pipework installation which has a length of 36 m.

State how many reversion fittings are required, and give the measurements for where they are to be placed in the pipework.

(3 marks)

Total 7 marks

QUESTION 8

The diagram on the page opposite shows the pipework and appliances for a gas installation. The diagram is drawn to a scale of 1:50

Installation Details are as follows:

- Natural gas
- Copper pipe (NZS 3501)
- Installation supply pressure 2.5 kPa.

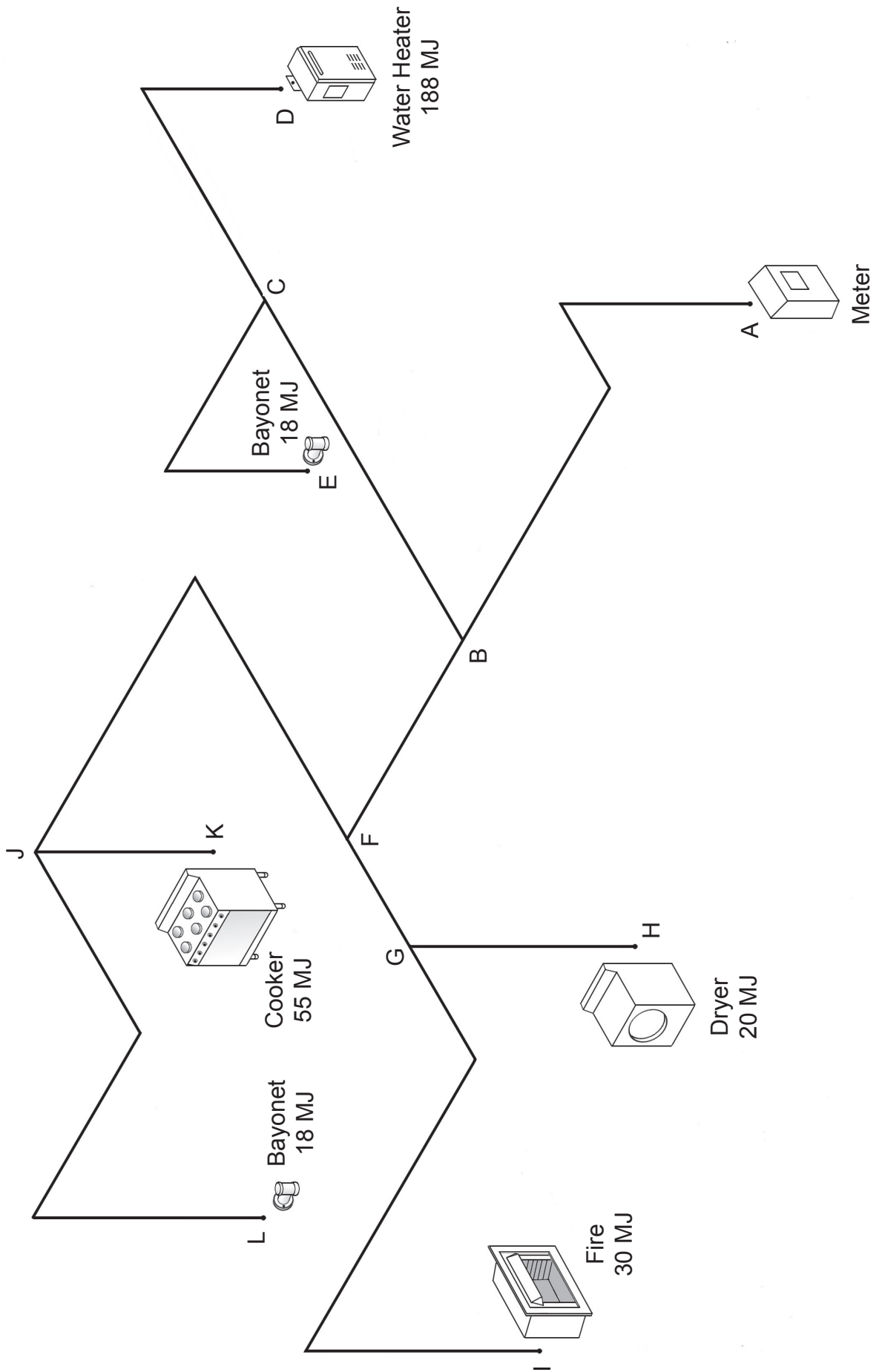
Use the Pipe Sizing Tables from AS/NZS 5601 Part 1 Appendix F, Page 140, to complete the tables below pipe sizing the plan on the page opposite. Use the sizing tables and not the sizing graphs to answer this question.

Section	Section Length
A - B	
B - F	
B - C	
C - E	
C - D	
F - G	
G - H	
G - I	
F - J	
J - K	
J - L	

Section	Main Run m	Gas Flow MJ/h	Nominal Size
A - B			
B - F			
B - C			
C - E			
C - D			
F - G			
G - H			
G - I			
F - J			
J - K			
J - L			

Total 23 marks

QUESTION 8 (cont'd)



QUESTION 9

(a) Give TWO functions of an LPG auto-change over regulator.

1 _____

2 _____

(2 marks)

(b) Explain why an auto-changeover regulator may switch to a reserve cylinder when the primary cylinder is still half full.

(1 mark)

(c) Give TWO options which can lessen the situation in (b) from occurring.

1 _____

2 _____

(1 mark)

Total 4 marks

QUESTION 10

- (a) Often when a gas storage water heater is first started the sound of water dripping onto the burner is heard.

Explain how this water is produced.

(2 marks)

- (b) Explain why the dripping occurs more at different times.

(2 marks)

Total 4 marks

QUESTION 11

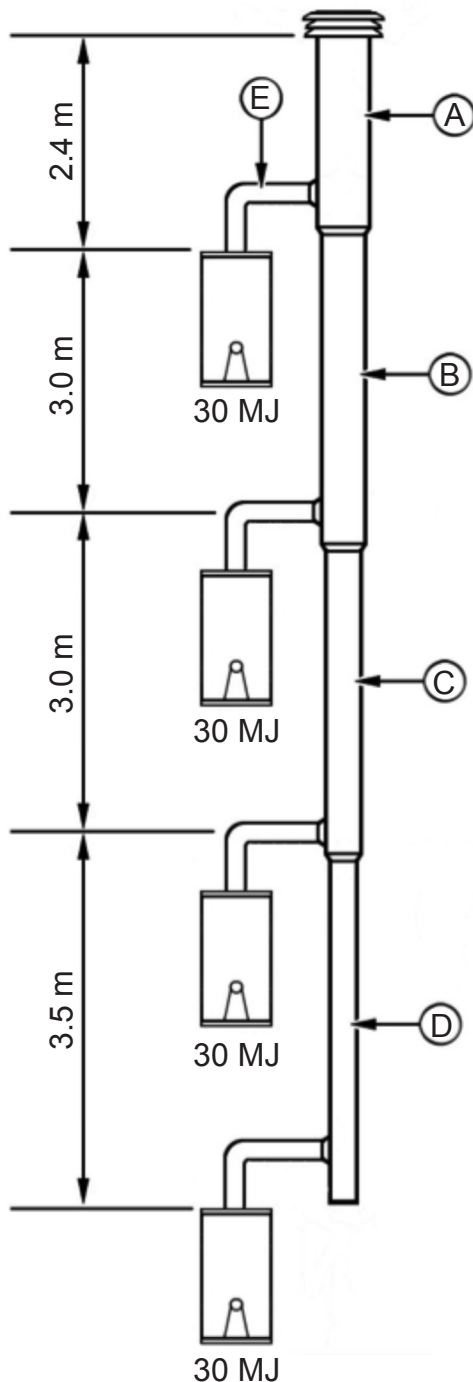
(a) A common flue is to be installed within a four-storey apartment building.

A water heater is to be installed on each floor in the building.

Each flue connector has a rise of 400 mm and a lateral run section of 600 mm.

Each water heater has a 75 mm down draught diverter.

Using the information from the diagram below, complete the table showing the minimum size of each flue section according to AS/NZS 5601 Part 1 Appendix H.



Flue Section	Minimum Size
A	
B	
C	
D	
E	

(5 marks)

QUESTION 11 (cont'd)

(b) A common flue is being designed for appliances at different levels of a multi-storey building.

Give TWO reasons a separate flue for an appliance on the top floor may be chosen rather than connecting it to the common flue.

- 1 _____
- 2 _____

(2 marks)

(c) The flue sizing tables in AS/NZS 5601 Part 1 provide allowance for two 90° changes of direction in a flue connector that is attached to a common flue.

Give THREE design alterations which would allow additional changes of direction.

- 1 _____
- 2 _____
- 3 _____

(3 marks)

Total 10 marks

QUESTION 12

- (a) Give the ventilation requirements for a school classroom in which several gas cookers are to be installed.

(2 marks)

- (b) A gas refrigerator is to be installed in a sleeping area. The refrigerator has a storage capacity of 150 litres.

Give TWO requirements specific to this installation that will ensure it complies with AS/NZS 5601 Part 1.

1

2

(2 marks)

Total 4 marks

SECTION B

Answer the following multiple-choice questions by writing your answer (A, B, C, D or E) in the box provided after each one of the questions.

Each correct answer in this section of the examination is worth 1 mark.

Note that should your choice of answer be unclear in this section of the examination no marks will be awarded for that question.

1. If the maximum over-pressure is not indicated on a gas appliance and the rated working pressure is known to be 2 kPa, which of the following would be used as the maximum over-pressure for the appliance?

- A 2 kPa.
- B 2.5 kPa.
- C 3 kPa.
- D 7 kPa.
- E 14 kPa.

2. If a tailpipe is to be attached to a 32 mm section of pipe on gas installation pipework, which of the following shows the smallest permitted size of the tailpipe end cap?

- A 10 mm.
- B 15 mm.
- C 20 mm.
- D 25 mm.
- E 32 mm.

3. What is the minimum vertical dimension of a free ventilation opening used for air supply to a gas appliance is?

- A 4 mm.
- B 5 mm.
- C 6 mm.
- D 10 mm.
- E 15 mm.

4. According to AS/NZS 5601 Part 1, which of the following is the maximum length of a gas appliance restraint on a freestanding appliance?
- A 75% of the length of the flexible hose.
 - B 80% of the length of the flexible hose.
 - C 85% of the length of the flexible hose.
 - D 95% of the length of the flexible hose.
 - E 100% of the length of the flexible hose.

5. According to AS/NZS 5601 Part 1, above what incoming operating pressure is over-pressure protection required on a natural gas installation?
- A 7 kPa.
 - B 10 kPa.
 - C 14 kPa.
 - D 15 kPa.
 - E 30 kPa.

6. A vent line is required to be installed for a vented safety shut off system. The vent valve is 6 mm and the length of the vent line is 65 m long.

According to AS/NZS 5601 Part 1, what is the minimum allowable diameter of the vent line?

- A 8 mm.
- B 10 mm.
- C 12 mm.
- D 15 mm.
- E 20 mm.

7. Outdoor, overhead radiant heaters must be installed a minimum of which height above floor level?

- A 1 m.
- B 1.2 m.
- C 1.5 m.
- D 1.8 m.
- E 2 m.

8. According to AS/NZS 5601 Part 1, which of the following shows the minimum thickness for toughened glass when used with 6 mm fibre cement backing material as combustible surface protection adjacent to a gas hob?

- A 3 mm.
- B 4 mm.
- C 5 mm.
- D 6 mm.
- E 8 mm.

9. According to AS/NZS 5601 Part 1, what is the nominal vaporization capacity of a 45 kg LPG cylinder at 10°C?

- A 90 MJ/hr.
- B 108 MJ/hr.
- C 122 MJ/hr.
- D 164 MJ/hr.
- E 240 MJ/hr.

10. When consumer gas pipework is to be embedded in a concrete wall, what pressure must not be exceeded?

- A 3 kPa.
- B 7 kPa.
- C 10 kPa.
- D 14 kPa.
- E 30 kPa.

11. What is the maximum gas consumption per cubic meter of room volume permitted for a flueless space heater located in a lobby?

- A 0.2 MJ/hr/m³.
- B 0.3 MJ/hr/m³.
- C 0.4 MJ/hr/m³.
- D 0.6 MJ/hr/m³.
- E 0.8 MJ/hr/m³.

12. Where a 9 kg LPG cylinder is to be used indoors, the compartment in which the cylinder is located must have a low level vent of which minimum size?

- A 300 mm².
- B 600 mm².
- C 750 mm².
- D 800 mm².
- E 1000 mm².

13. According to AS/NZS 5601 Part 1, what is the minimum clearance between a Chinese cooking table and a grease filter?

- A 600 mm.
- B 700 mm.
- C 1050 mm.
- D 1200 mm.
- E 1350 mm.

14. According to AS/NZS 5601 Part 1, what is the minimum distance a gas bayonet socket can be located from a doorway?

- A 0.6 m.
- B 0.8 m.
- C 1 m.
- D 1.2 m.
- E 1.5 m.

15. Where a gas appliance is to be installed under a floor and the floor is less than 1.2 m above the ground level, the appliance must be located within what distance of the access opening?

- A 2 m.
- B 4 m.
- C 5 m.
- D 8 m.
- E 10 m.

16. What temperature must combustion products from a natural gas appliance which is connected to a common flue not exceed?

- A 260°C.
- B 380°C.
- C 440°C.
- D 510°C.
- E 650°C.

17. A natural gas boiler has been installed and commissioned.

Which of the following is the optimal carbon dioxide content in the flue gases?

- A 8%
- B 12%
- C 18%
- D 22%
- E 24%

18. Which answer below describes the limit at which a Location Test Certificate is required for a site?

- A 90 kg of LPG used or stored at one place for more than 18 hours.
- B 90 kg of LPG used or stored at one place for more than 24 hours.
- C 100 kg of LPG used or stored at one place for more than 18 hours.
- D 100 kg of LPG used or stored at one place for more than 24 hours.
- E 200 kg of LPG used or stored at one place for more than 36 hours.

19. According to AS/NZS 5601 Part 1, what is the minimum spacing of supporting devices for a 25 mm diameter multi-layer gas pipe which is installed vertically in a building?

- A 1 m.
- B 1.5 m.
- C 2 m.
- D 2.5 m.
- E 3 m.

Total 19 marks

For Examiner's use only

Question number	Marks	Marks
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
Section B		
Total		