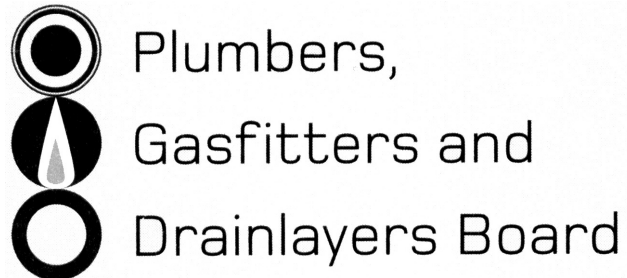


No. 9196



REGISTRATION EXAMINATION, NOVEMBER 2019
CERTIFYING GASFITTER

ANSWER SCHEDULE

ANSWER 1

- (a) (i) CoC
Name: Certificate of Compliance
When issued: When a new installation or part of an installation has been completed. (2 marks)
- (ii) GSC
Name: Gas Safety Certificate
When issued: After work has been completed and connected. (2 marks)
- (iii) CoV
Name: Certificate of Verification
When issued: When an existing gas installation has been checked for safe supply of gas. (2 marks)
- Total 6 Marks**

ANSWER 2

- (a) Gas rate = $\frac{0.05 \times 42 \times 3600}{85}$ (2 marks)
= 88.94 MJ/h (1 mark)
= 24.71 kW (1 mark)
Energy output = $0.85 \times 24.71 = 20.99$ kW (1 mark) (5 marks)
- (b) 120,000 BTU = $120,000 \times 0.001055 = 126.6$ MJ (2 marks)
Gas rate = $\frac{126.6}{42} = 3.01$ m³/h (1 mark) (3 marks)
- (c) Correction factor = $\frac{101.3 + 7}{101.3} = 1.069$ (1 mark)
Corrected volume = $3.01 \times 1.069 = 3.22$ m³/h (2 marks) (3 marks)
- Total 11 Marks**

ANSWER 3

- (a) • Soot in and around the entrance to the combustion chamber.
• The thermal fuse has been activated.
• Heat damage to the valve assembly above the combustion chamber entrance. (3 marks)
- (b) • Flames or heat spilling out the front of the burner chamber.
• Waffing, lazy, vitiated flame not receiving secondary air supply. (2 marks)
- (c) • Advise the owner or occupier.
• Notify WorkSafe (Energy Safety). (2 marks)
- Total 5 Marks**

ANSWER 4

- (a) When the penetration has diameter 85 mm - 500 mm. (1 mark)
- (b) When the penetration has any dimension 200 mm or greater. (1 mark)
- (c) (i) 130 mm (3 marks)
(ii) 250 mm (1 marks)

Total 6 Marks

ANSWER 5

Pipe Section	Length (m)	Main Run (m)	Gas Flow (MJ/h)	Nominal Size
A - B	8.5	36.9 (½ mark)	1274 (½ mark)	50 (1 mark)
B - C	1.5		24 (½ mark)	10 (1 mark)
B - D	9.0		1250 (½ mark)	50 (1 mark)
D - E	1.5		440 (½ mark)	32 (1 mark)
D - F	3.2		810 (½ mark)	40 (1 mark)
F - G	3.5		626 (½ mark)	40 (1 mark)
G - H	1.5		422 (½ mark)	32 (1 mark)
H - I	0.6		62 (½ mark)	20 (1 mark)
F - J	7		184 (½ mark)	25 (1 mark)
J - K	3.2		160 (½ mark)	25 (1 mark)
J - L	9.2		24 (½ mark)	10 (1 mark)

Total 17 Marks

ANSWER 6

- Two at 108,000 mm² plant/storeroom wall High and low
- Two at 126,000 mm² storeroom/outside wall High and low

(1 mark each part)

Total 6 Marks

ANSWER 7

- (a)
- | Section | Diameter (mm) | Volume | |
|---------|---------------|--------------|----------|
| A - B | 50 | 12.12 litres | (1 mark) |
| B - C | 40 | 7.98 litres | (1 mark) |
| B - D | 32 | 4.74 litres | (1 mark) |
| D - E | 25 | 2.5 litres | (1 mark) |
- (4 marks)
- (b) Total volume = 27.07 litres.
Maximum acceptable pressure drop = 0.10 kPa (1 mark)

Total 5 Marks

ANSWER 8

- (a) (i) 200 mm. (1 mark)
- (ii) From the edge of the burner. (1 mark)
- (b) (i)
- Use 5 mm thick ceramic tiles.
 - Use 5 mm toughened safety glass.
 - Use 0.4 mm sheet metal over 6 mm fibre cement board. (3 marks)
- (ii) 150 mm. (1 mark)

Total 6 Marks

ANSWER 9

- (a) Any ONE (1 mark each)
- Worker required to breathe air or gas that has been compressed or under pressure.
 - Where the confined space is a tunnel or drive underground.
 - If explosives are being used or stored. (1 mark)
- (b) Any FOUR (1 mark each)
- Two-way radio.
 - Tripod and harness.
 - Length of rope.
 - Phone for contacting emergency services.
 - Gas monitoring equipment.
 - Timer.
 - Record of entry and exit. (4 marks)

Total 5 Marks

ANSWER 10

- (a) A suitably qualified person who performs the physical supervision on behalf of the certifier (2 marks)
- (b) 12 months (1 mark)
- (c) 24 months (1 mark)
- (d) • Tradesman
• Journeyman (2 mark)

Total 6 Marks

ANSWER 11

- (a) Any FOUR (½ mark each)
- Sunlight.
 - Heat.
 - Moisture.
 - Chemicals.
 - Sharp edges and abrasives.
 - Incorrect storage (not hung up etc).
 - Amount of use.
 - Incorrect use. (2 marks)
- (b) Any THREE (1 mark each)
- Barriers.
 - Nets.
 - Meshes.
 - Fall restraints.
 - Airbags.
 - Scaffolding.
 - Mobile work platforms. (3 marks)

(c) Any FIVE (1 mark each)

- Work where workers could fall 5 m or more, excluding work on a two-storeyed house, or work on a power or telephone line, or work carried out from a ladder only, or maintenance or repair work of a minor or routine nature.
- 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.
- Lifts of half a tonne (500 kg) or more (a vertical distance of 5 m or more) carried out by mechanical means other than by a mobile crane, excavator or forklift.
- 'Restricted work' as defined by the Asbestos regulations.

(5 marks)

Total 10 Marks

ANSWER 12

(a) $20,000 \times 2 = 40,000$ (1 mark)

$40,000 \div 900 = 44.44$ (1 mark)

44.44 mm (1 mark)

Top and bottom (1 mark)

(4 marks)

- (b)
- To allow room for vaporisation in the cylinder.
 - To allow for expansion due to increases in temperature.

(2 marks)

Total 4 Marks

SECTION B

1. D 14.0 kPa.
2. B 12%
3. A Appliances with atmospheric burners joined to the same flue as appliances with forced draught burners.
4. E 14.0 kPa.
5. C 20 mm per m.
6. A 60°C.
7. D 450 mm.
8. D NZS 4219.
9. B 1.5 m.

Total 9 Marks