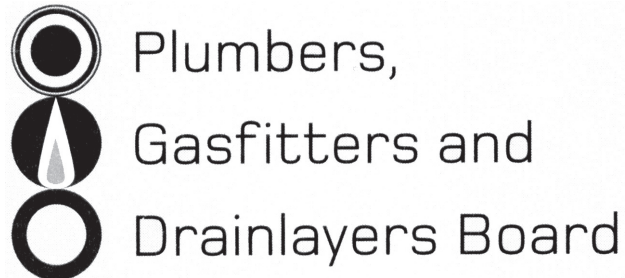


No. 9196



REGISTRATION EXAMINATION, JUNE 2016
CERTIFYING GASFITTER

ANSWER SCHEDULE

ANSWER 1

(a) Any FOUR (1 mark each)

- Blocked flue.
- Lack of ventilation.
- Too many bends.
- Disturbed air at cowl.
- Flue too small.
- High gas pressures.
- Cracked heat exchanger.

(4 marks)

(b) Any FOUR (1 mark each)

- Low gas pressure.
- Faulty/dirty flame sensor probe or lead.
- Partially blocked burner or heat exchanger.
- Faulty earth circuit.
- PCB Fault.

(4 marks)

(c) Any FIVE (1 mark each)

- The flue is blocked causing incomplete combustion.
- The aeration for the burner could be blocked with lint.
- The mixing tube could be blocked.
- The burner ports could have enlarged or corroded.
- The gas pressure may be incorrect.
- The radiant may be incorrectly positioned.

(4 marks)

Total 12 Marks

ANSWER 2

Pipe Section	Length (m)	Main Run (m)	Gas Flow (MJ/h)	Nominal Size
A – B	1.5	18.8 m	1060	40 mm
B – C	5		120	20 mm
C – D	1.5		76	15 mm
D – E	1		38	15 mm
B – F	4.2		940	40 mm
F – G	4.5		376	25 mm
G – H	0.5		188	20 mm
F – I	4.4		564	32 mm
I – J	2.6		440	25 mm
J – K	1.2		220	20 mm
J – L	5.3		220	20 mm
I – M	8.7		124	20 mm

(1 mark)

(½ mark each)

(1 mark each)

Total 19 Marks

ANSWER 3

- (a) 150 mm (1 mark)
- (b) Any ONE (1 mark)
- Ignition sources
 - Readily ignitable material (1 mark)
- (c) (i) 500 mm. (1 mark)
- (ii) Run a vent line from the regulator vent to an acceptable location. (1 mark)
- (d) (i) The cylinder cannot vaporise the liquid LPG fast enough to keep up with the load required from the appliances. (1 mark)
- (ii) Any TWO (1 mark each)
- Adding more cylinders to cope with the demand.
 - Using propane only filled cylinders.
 - Heated cylinder jackets. (2 marks) (3 marks)
- (e) Over 100 kg of LPG and on site for longer than 18 hours. (2 marks)

Total 9 Marks

ANSWER 4

- (a) Any THREE (1 mark each)
- Excavation and Shafts for Foundations.
 - Hazardous Substances.
 - Noise in the Workplace.
 - Operator protective structures on self-propelled mobile mechanical plant.
 - Installation and maintenance of LPG multi-cylinder systems.
 - Installation and maintenance of twin 45 kg LPG cylinder systems.
 - Code of Practice for LPGA Compliance 100 kg to 300 kg.
 - Guide for Safety with Underground Services. (3 marks)
- (b) To give preferred work practice or arrangements. (1 mark)
- (c) Observance of a relevant code of practice may be considered as evidence of good practice in a court. (1 mark)

Total 5 Marks

ANSWER 5

- (a) Before the first tee.
Before the last tee. (2 marks)
- (b) To permit future extension or connection with non-compatible materials. (1 mark)
- (c) BSPT (British Standard Pipe Thread) fitting between two multilayer/threaded adapters.
Standard annealed copper tube between two multilayer/threaded adapters. (2 marks)
- (d) • A label must be attached adjacent to the meter or cylinders.
• The make or trade name must be shown.

(2 marks)

Total 7 marks

ANSWER 6

Minimum length of 'X'	4.6 m (3 marks)		
Minimum Diameter of A	200 mm (1 mark)	Minimum Diameter of D	300 mm (1 mark)
Minimum Diameter of B	250 mm (1 mark)	Minimum Diameter of E	150 mm (1 mark)
Minimum Diameter of C	300 mm (1 mark)	Minimum Diameter of F	350 mm (1 mark)

Total 9 Marks

ANSWER 7

- (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

(3 marks)

Total 5 Marks

ANSWER 8

(a) WorkSafe New Zealand

(1 mark)

(b) At least 24 hours.

(1 mark)

(c) Any ONE (1 mark)

- If it is necessary to deal with an emergency arising from damage caused by any earthquake, explosion, fire, flood, lightning, rain, slip, storm, or washout.
- The blockage or breakdown of any drain or sewer.
- The blockage or breakdown of any distribution system or network for electricity, gas, telecommunications, or water.

(1 mark)

(d) 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 is also notifiable work.

(5 marks)

Total 8 Marks

ANSWER 9

- (a) • $78,000 \times 0.001055 = 82.29 \text{ MJ}$ (2 marks)
• $82.29 \div 42 = 1.959$ (1 mark)

(3 mark)

- (b) $101.3 + 10 = 111.3$ (1 mark)
 $111.3 \div 101.3 = 1.098$ (1 mark)
 $1.959 \times 1.098 = 2.15 \text{ m}^3/\text{h}$ (1 mark)

(3 marks)

Total 6 Marks

ANSWER 10

Any FOUR ($\frac{1}{2}$ mark each)

- Purge the installation with an inert gas.
- Purge the pipe to outside atmosphere.
- Purge 6 m away from ignition sources.
- Purge well clear of any openings into buildings.
- Continuously check air/gas ratios using a calibrated gas detector to indicate when the purge is complete.

Total 2 Marks

ANSWER 11

- (a) Low-risk
High-risk
General gasfitting (3 marks)
- (b) High-risk gasfitting. (1 mark)
- (c) Energy Safety (1 mark)

Total 5 Marks

ANSWER 12

Any THREE (1 mark each)

- Cut building wrap to suit pipe.
- Install duct inclined downwards to outside.
- Seal penetration of building wrap to pipe with flashing tape.
- Seal cladding to pipe using suitable sealant.

Total 3 Marks

SECTION B

1. E 25%
2. D 50%
3. E 500°C
4. C 19 mm
5. D NZS 4219
6. D 7 kPa
7. B 1.5 m
8. D 1200 mm
9. A 7 kPa
10. A 19 mm

Total 10 Marks