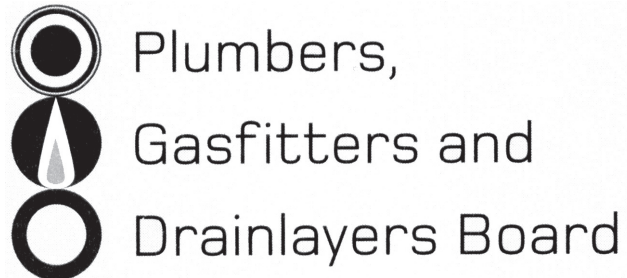


No. 9196



REGISTRATION EXAMINATION, NOVEMBER 2016
CERTIFYING GASFITTER

ANSWER SCHEDULE

ANSWER 1

Any THREE (1 mark each)

- The Plumbers Gasfitters and Drainlayers Act.
- The Building Act.
- The Gas Act.
- The Electricity Act.

Total 3 Marks

ANSWER 2

- Measurement 'X' correct (130 mm). (2 marks)
- Corrugations crossed according to the wind zone (2 crests finish in trough). (1 mark)
- Rubber boot flashing on angle. (1 mark)
- Soaker flashing terminating under ridge flashing or cover sheet (250 mm). (2 marks)
- Fixing of rubber boot flashing to soaker flashing. (1 mark)
- Support for flashing shown. (1 mark)

Total 8 Marks

ANSWER 3

Sizing Table	
Allowable Pressure Drop	10%
Main Run	21-22 m
Total MJ	321
Additional metres Per fitting	0.6
Number of fittings	10
Corrected Length	+ 6 m
Main run pipe diameter	32 mm

Pipe Section Table		
Pipe Section	MJ	Pipe Size
A – B	321	32 mm
B – C	220	25 mm
B – D	101	20 mm
D – E	35	15 mm
D – F	66	20 mm
F – G	38	15 mm
F – H	28	15 mm

(1 mark each)

Total 24 Marks

ANSWER 4

Pipe Section	Number of clips
A – B 50 mm diameter pipe	8
B – C 25 mm diameter pipe	6
B – D 40 mm diameter pipe	7
D – E 32 mm diameter pipe	5

Total 4 Marks

ANSWER 5

- $450 \times 0.3 = 135$
 - $60 \times 0.5 = 30$
 - Vol (l) per second = $135 + 30 = 165$
 - Vol (l) per hour = $165 \times 3600 = 594,000$
 - Vol (m^3) per hour = $594,000 \div 1000 = 594 m^3/hr$ (5 marks)
- (b) $450 + 30 + 30 = 510 MJ$
 $510 \times 150 = 76,500 mm^2$ (2 marks)
- (c) $594 \div 4 = 148.5 m^3$ (1 mark)
- (d) A fan interlock that will shut off the gas supply. (2 marks)

Total 10 marks

ANSWER 6

Any FOUR (1 mark each)

1. Measurement systems.
2. Gas quality.
3. Gas composition.
4. Normal and emergency operating conditions.
5. Environment conditions.
6. Temperature.
7. Pressure to which they will be subjected.

Total 2 Marks

ANSWER 7

- (a) Gas rate = $\frac{0.05 \times 40 \times 3600}{70}$ (2 marks)
= 102.86 MJ/h (1 mark)
= 102.86/3.6 kW
= 28.5 kW (1 mark)
Energy output = 80% of 28.5% = 22.86 kW (1 mark)
- (b) Energy passed would increase. (1 mark)

Total 6 Marks

ANSWER 8

Any FIVE (1 mark each)

- Type of gas being used.
- Inlet or upstream pressure.
- Outlet or downstream pressure.
- Maximum flow anticipated.
- Size of pipework.
- Location.

Total 5 Marks

ANSWER 9

(a) Any SIX of:

- Manufacturer.
- Model Number.
- Type of gas.
- Working pressure.
- Input rating.
- The gas safety compliance label.

(3 marks)

- (b)
- Shape of flue – circular or non-circular
 - Input rating of appliance
 - Length of the flue allowing for lateral runs
 - Material of construction – heat loss
 - Position – heat loss
 - Size of flue spigot on appliance
 - Any recommendations of appliance manufacturer
 - Termination point

(3 marks)

Total 6 Marks

ANSWER 10

- (a)
- Replacement of a gas appliance with an equivalent gas appliance, except in a caravan or boat with sleeping quarters, provided the work does not involve:
 - the repositioning of pipework or flue, or
 - a change in the installation pressure, gas type, ventilation, energy consumption, or operation of the installation.

(This is sometimes referred to as 'like for like' gasfitting.)
 - The maintenance of fittings and appliances other than repairs following a notifiable accident.
 - The replacement of instrumentation and related controls, but only if the work does not result in the repositioning or disturbance of other pipework.
 - The setting of safety devices, combustion conditions, and controls that are not designed to be adjusted by a consumer or gas refueller.
 - Temporary gasfitting for experimental, testing, demonstration, teaching, or research purposes in a gas engineering workshop, manufacturing facility, gas test facility, laboratory, hospital, research project, or teaching institution.

(2 marks)

- (b) • Addition or alteration to an existing installation.
 • Work not carried out in accordance with the means of compliance in the Installation Standard.
 • Work on an installation that includes gas pressure-raising equipment.
 • Repair work following a notifiable accident.
 • Work in domestic premises where the maximum operating pressure is more than 7 kPa for natural gas or more than 14 kPa for LPG.
 • Work in a building of more than three storeys which contains three or more separate dwellings.
 • Work done to AS/NZS 5601 Part 1 where the supply pressure to the installation is greater than 200 kPa.
 • Work done to AS/NZS 5601 Part 2 where the supply pressure to the installation is greater than 3 kPa.
 • Work done within 20 metres of a hazardous area.
 • Work done in a building in which air pressure is controlled by a mechanical ventilation system.
 • Work done in a place where combustion air may be varied by mechanical means
 • Work done in a caravan or boat that contains sleeping accommodation. (2 marks)
- (c) General gasfitting is gasfitting that is not categorised as low-risk or high-risk work. (1 mark)
- (d) Replacement of a gas appliance with an equivalent gas appliance, provided the work does not involve:
 – the repositioning of pipework or flue, or
 – a change in the installation pressure, gas type, ventilation, energy consumption, or operation of the installation. (1 mark)
- Total 6 Marks**

ANSWER 11

- (a) • Structure built at ground level and lifted into position on completion. (1 mark)
- (b) Any THREE (1 mark each)
- Edge protection.
 - Guard-railed work platform (e.g., scaffold or elevating work platforms).
 - Total restraint system to prevent a fall occurring. (2 marks)
 - Fall arrest system.
 - Nets or air bags to minimise the impact of a fall.
 - Where unguarded trestles or platforms are used, or the work will be done from a ladder or stilts, the risk of harm shall be minimised through management controls and the provision of appropriate training. Management controls include effective housekeeping protocols and clear procedures for safe use of the equipment. (3 marks)
- Total 6 Marks**

ANSWER 12

- (a) • WorkSafe New Zealand. (1 mark)
- (b) • 24 hours. (1 mark)
- (c) Any FIVE (1 mark each)
- Nature of work.
 - Address of worksite.
 - Contractor details.
 - Brief description of work.
 - Due date of commencement.
 - Estimated time to complete.

(5 marks)

Total 7 Marks

ANSWER 13

Maximum outlet operating pressure LPG	3.5 kPa
Maximum outlet operating pressure natural gas	1.5 kPa

Total 2 Marks

ANSWER 14

- The thermocouple is too far from the flame.
- The oven by-pass is set incorrectly.
- The thermostat is faulty.

Total 3 Marks

SECTION B

1. A 60°C.
2. E 25 litres.
3. E The volume is indicated on the meter badge.
4. C Oxygen Depletion Pilot.
5. D 3 months.
6. D 4000 mm².
7. B QCC.
8. D 450 mm.
9. A When it has a mass of 20 kg or less.

Total 9 Marks