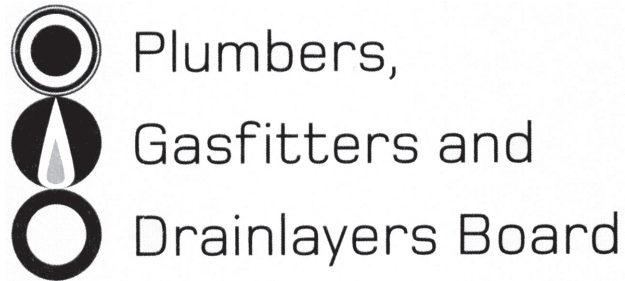


No. 9196



REGISTRATION EXAMINATION, JUNE 2023
CERTIFYING GASFITTER

ANSWER SCHEDULE

ANSWER 1

- $3.142 \times 12.5 \times 12.5 = 490.93$ (1 mark)
- $490.93 + 490.93 = 981.86$ (1 mark)
- $981.86 \div 3.142 = 312.49$ (1 mark)
- $\sqrt{312.49} = 17.67$ (1 mark)
- Diameter = $17.67 \times 2 = 35.34$ mm so minimum diameter = 40 mm (1 mark)

Total 5 marks

ANSWER 2

- (a) • 580 ÷ 141 = 4.6, so 5 cylinders. (2 marks)
- (b) • 5 (1 mark)
- (c) • 150 mm. (1 mark)
- (d) • A workplace with more than 100 kg of LPG in one location. (2 marks)
- (e) • Ignition sources. (1 mark)
- (f) (i) • 500 mm. (1 mark)
- (ii) • Run a vent line from the regulator vent to an acceptable location. (1 mark)
- (g) • The cylinder cannot vaporise the liquid LPG fast enough to keep up with the load required from the appliances. (1 mark)
- (h) Any TWO:
- Add more cylinders to cope with the demand.
 - Use propane-only filled cylinders.
 - Use heated cylinder jackets. (2 marks)
- (i) Any TWO:
- The variation between the ambient surrounding temperature and the confined LPG.
 - The size of the exposed surface area of the container.
 - The area of the container in contact with the confined liquid (wetted area). (2 marks)

Total 14 marks

ANSWER 3

- (a) • Test points at each appliance (to set operating pressure) and test-point after the supply regulator (to test/check operating pressures). (1 mark)
- Isolating valves at the water heater and ducted heater only. (2 marks)
- (b) • Test points must be self-sealing type. (1 mark)

Total 4 marks

ANSWER 4

- (a) • Leakage test. 6 kPa (2 marks)
- Pipework test on section Y – Z. 9 kPa (2 marks)
- Installation or leakage test. 6 kPa (2 marks)
- Final connection test. 6 kPa (2 marks)
- (8 marks)

- (b) (i)

Section	Length	Material	Volume
A - B	7 m	40 mm AS1074 steel	0.008796 m ³
B - C	3 m	20 mm NZ3501 copper	0.002121 m ³
B - D	4 m	32 mm AS1074 steel	0.003217 m ³
Y - Z	4 m	32 mm polyethylene AS/NZS4130	0.003217 m ³

TBC (4 marks)

- (ii) 0.35 kPa. (1 mark)

Total 13 marks

ANSWER 5

Pipe Section	Number of clips
A - B	3
B - C	3 (2?)
C - D	3
B - E	12 (9?)
E - F	3
F - G	6

Total 6 marks**ANSWER 6**

Pipe section	Length (metres)	Main Run	Gas flow (MJ/h)	Nominal size
A - B	21 (½ mark)	30 m (½ mark)	$99.17 + 79.2 = 178.37$ (1 mark)	20 mm (1 mark)
B - C	5 (½ mark)		$22 \times 3.6 = 79.2$ (2 marks)	20 mm (1 mark)
B - D	9 (½ mark)		$94,000 \times 0.001055 = 99.17$ (2 marks)	20 mm (1 mark)

Total 10 marks**ANSWER 7**

- (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 8

- $50 \div 2 = 25$ (1 mark)
- $25 \times 3600 = 90,000$ (1 mark)
- 3 min 10 seconds = 190 seconds (1 mark)
- $90,000 \div 190 = 473.68$ MJ/hr (1 mark)
- Energy Input in kW = $473.68/3.6 = 131.57$ kW (1 mark)
- Energy Output = 80% of 131.57 = 105.26 kW (1 mark)

Total 6 marks

ANSWER 9

- (a) • A suitably qualified person who performs physical supervision on behalf of a certifying gasfitter. (2 marks)
- (b) Any FOUR (½ mark)
- Tradesman.
 - Journeyman.
 - Exemption under supervision.
 - Trainee.
 - Provisional licence holder. (2 marks)
- (c) • Must be onsite with supervisee and be able see and hear the supervisee at all times. (2 marks)

(d)

Authorisation	Minimum time of direct supervision
Trainee	12 months
Exemption under supervision	24 months

(½ mark each entry) (2 marks)

- (e) • Certifying.
• Tradesman. (2 marks)

Total 10 marks

ANSWER 10

Any FIVE (1 mark each)

- Inform the occupier that the gas supply will be turned off.
- Test the existing installation for leakage.
- Turn the gas supply off.
- Positively identify the pipe.
- Fit an earth bonding strap.
- Purge the pipe.

Total 5 marks

ANSWER 11

- (a) • Position of power lines.
• Stability of ground.
• Operator of the cherry picker is trained.
• Availability of a suitable harness. (½ mark each, 2 marks)
- (b) Any FOUR (½ mark each)
- Be erected by a competent person and used in accordance to the manufacturer's specifications.
 - Remain level and plumb at all times.
 - Be kept at least one metre from open floor edges and openings unless the edge is protected to prevent the scaffold tipping.
 - Never be accessed until all the castors are locked to prevent movement.
 - Never be moved while anyone is on it.
 - Be clear from overhead power lines. (2 marks)
- (c) (i) • Friable, non-friable. (1 mark)
- (ii) Any FOUR (1 mark each)
- Flues.
 - Door seals.
 - Insulation.
 - Ropes.
 - Asbestos-containing mastik. (4 marks)

Total 9 marks

SECTION B

1. E 4.4 m.
2. A When the product certification allows for it to be used.
3. B A trench which is 2 metres deep and 1.5 metres wide at the top.
4. D 15 mins.
5. B Repositioning gas installation pipework to allow for the installing of a new window.
6. E 1000 mm².
7. A 20 litres/second.
8. C 20 mm per m.
9. C 18 m³.
10. B 50 mm.

Total 10 marks