No. 9196

Plumbers, Gasfitters and Drainlayers Board

REGISTRATION EXAMINATION, NOVEMBER 2010

CERTIFYING GASFITTER

ANSWER SCHEDULE

ANSWER 1

Model answer

Sizing Table	
Allowable Pressure Drop	10%
Main Run	20.5 - 22
Total MJ	321
Additional Meters Per Fitting	0.6
Number of Fittings	10
Corrected Length	26.5 - 28
Main Run Pipe Diameter	32 mm

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

Marking schedule.

Sizing Table	
Allowable Pressure Drop	1 mark
Main Run	2 marks
Total MJ	1 mark
Additional Meters Per Fitting	2 marks
Number of Fittings	1 mark
Corrected Length	2 marks
Main Run Pipe Diameter	2 marks

Pipe Section Table		
Pipe Section	MJ	Pipe Size
A - B	1 mark	1 mark
B - C	1 mark	1 mark
B - D	1 mark	1 mark
D - E	1 mark	1 mark
D - F	1 mark	1 mark
F - G	1 mark	1 mark
F - H	1 mark	1 mark

Total 25 Marks

ANSWER 2

- Gas pipe through bottom plate (1 mark)
- Condensate pipe (2 marks)
- Top plate bracing (1 mark)
- Building paper (1 mark)
- Roof flashing (1 mark)
- Soaker flashing (1 mark)

Total 7 Marks

ANSWER 3

20,000 mm² per cylinder
3 × 20 000 = 60 000 (2 marks)

60,000 mm ÷ 900 mm = 66.66 accept 67 mm (2 marks)

Total 4 Marks

ANSWER 4

(a) The extra length of pipework will cause a pressure loss. (1 mark)

(b) 1. The pipe size could be increased. (1 mark)
2. Increase the gas pressure within the pipework. (1 mark)

Total 3 Marks

ANSWER 5

(a) At very low temperatures butane will not evaporate and is left in the cylinder when the propane is drawn off. (2 marks)

(b) 1. Change to propane enriched gas (1 mark)
2. Use a liquefied gas supply with a vaporiser (1 mark)

(c) ANY TWO – (1 mark each)
1. The variation between the ambient surrounding temperature and the confined LPG
2. The size of the exposed surface area of the container
3. The area of the container in contact with the confined liquid (wetted area)

(2 marks)

Total 6 marks

ANSWER 6

Any TEN (½ mark each)

- Position outside the building
- Clear of drains
- At or close to ground level
- Not under a building
- In a well-ventilated area, not enclosed
- Upright on a firm base
- Able to be secured to prevent toppling
- Not in an area subject to flooding
- Not liable to impact damage from vehicles etc
- Relevant distance from any ignition source
- Clear of openings into building
- Accessible for changeover
- Clear of combustibles, trees etc
- Allow for egress
- Aesthetics

Total 5 Marks

ANSWER 7

A Location Test Certificate is required where more than 100 kilograms of LPG is being used and/or stored in one place for more than 18 hours.

Total 3 Marks

ANSWER 8

(a) Convert MJ to kW 650MJ ÷ 3.6 = 180.5556 kW (induced appliance) (1 mark)
2 × 40 = 80 MJ 80MJ ÷ 3.6 = 22.22 kW (atmospheric appliances) (1 mark)
180.56 kW @ 3.6 m^3 /hr = 650.02 m^3 /hr (1 mark)
22.22kW @ 7.2 m^3 /hr = 159.9 m^3 /hr (1 mark)
650.02 + 159.98 = 810 m^3 /hr (1 mark)

(b) 180.56 kW + 22.22 kW = 202.78 kW (1 mark)
202.78 kW × 600 mm^2 = 121665.6 mm^2 (1 mark)

(c) One third of answer a
809.984 ÷ 3 = 269.9947 m^3 /hr (1 mark)

(d) A safeguard system that ensures the appliances will not operate if the ventilation system is not functioning must be fitted.

(2 marks)

Total 10 Marks

ANSWER 9

(a) The same size as the vent outlet connection on the regulator. (1 mark)

(b) One pipe size larger than the vent outlet connection on the regulator. (1 mark)

Total 2 Marks

ANSWER 10

Any THREE – (1 mark each)
Intended use.
Gas Consumption, or heat input.
Gas type.
Supply pressure.

Total 3 Marks

ANSWER 11

0.5 x 3600 = 1800 (1 mark)
1800 ÷ 155 = 11.6129 m³/hr (1 mark)
11.6129 x 42 = 487.74 MJ/hr (1 mark)
101.3 + 7.5 = 108.8 (1 mark)
108.8 ÷ 101.3 = 1.074 (1 mark)
487.74 x 1.074 = 523.832 MJ/hr (1 mark)
550 - 523.832 = 26.168 MJ/hr (1 mark)

Total 7 Marks

ANSWER 12

Mass of water = 180 litres = 180 kg Temperature rise = 70 - 18 = 52ºC (1 mark)
Heat required = mass × Sp Ht × temp rise = 180 × 4.2 × 52 = 39,312 kJ (1 mark)
Heat input = 39,312 × 100 ÷ 78 = 50,400 kJ = 50.40 MJ (1 mark)
Heat up time = 50.40 ÷ 45 = 1.12 h (1 mark)
Time in Minutes = 1.12 × 60 = 67.2 minutes (1 mark)

Total 5 Marks

ANSWER 13

(a) Any TWO (1 mark each)
Under a window
At least 200 mm from outside wall
In front of curtains
As far from the door as possible (2 marks)

(b) Any FOUR (½ mark each)
In a living area
Out of draughts
Out of direct sunlight
On an internal wall
Away from heat sources
1.5 m above floor (2 marks)

(c) Over Heating
Cycling
Uneven heat circulation
Slow heat-up times (2 marks)

(d) Draughts
Noise (2 marks)

Total 8 Marks

SECTION B

1.	D	Up to 50 parts per million.
2.	B	12%
3.	A	The volume of gas an oven bypass allows through to the main burner to maintain the desired temperature.
4.	A	Not exceeding 50 Volts.
5.	B	500 mm.
6.	D	1050 mm.
7.	E	5% of the height of the enclosure.
8.	D	450 mm.
9.	A	6 mm.
10.	C	Plastics.
11.	E	Because of the corrosive nature of condensate.
12.	D	AS 5601.