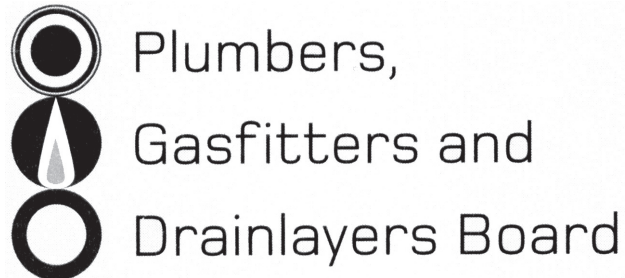


No. 9193



REGISTRATION EXAMINATION, JUNE 2017
TRADESMAN GASFITTER

ANSWER SCHEDULE

ANSWER 1

(a)	Names of products	Chemical symbol
	Oxygen	O
	Carbon	C
	Hydrogen	H

(3 marks)

(b)	Name of product	Chemical symbol
	Water vapour	H ₂ O
	Carbon dioxide	CO ₂
	Carbon	C
	Carbon monoxide	CO

Any THREE (1 mark each)

(3 marks)

Total 6 marks

ANSWER 2

- (a)
- Adequate to allow complete combustion.
 - Free of any substance that can adversely affect the safe operation or durability of the gas appliance.
- (2 marks)
- (b) Any THREE (1 mark each)
- House the cylinder only.
 - Cylinder must not obstruct the drain.
 - Must have easy removal and operation of the cylinder.
 - Not accessible from inside the boat.
- (3 marks)
- (c)
- Copper.
 - Hose assemblies.
 - Stainless steel.
- (3 marks)
- (d) Any FOUR (½ mark each)
- Readily accessible.
 - Quarter turn.
 - It must indicate if it is open or closed.
 - It must be labelled if it is not obvious what it is.
 - It must comply with AS4617 or equivalent and be certified.
- (2 marks)

Total 10 marks

ANSWER 3

- (a) The heating value of natural gas is 40 MJ/m³.
Volume consumed in 1 hour = $0.13 \times 12 = 1.56 \text{ m}^3$
Number of MJ = $1.56 \times 40 = 62.4 \text{ MJ/hr}$ (2 marks)
- (b) Volume consumed in $1.56 \times 10 = 15.6$
Volume of air required = $15.6 \times 5 = 78 \text{ m}^3$ (2 marks)
- (c) The heating value of LPG is 90 MJ/m³.
BTU = $150\,000 \times 0.001055 = 158.25 \text{ MJ}$
Gas rate = $158.25 \div 90 = 1.75 \text{ m}^3/\text{h}$ (2 marks)
- (d) Room volume = $6 \times 4.5 \times 2.7 = 72.9 \text{ m}^3$
Heater output = $72.9 \times 0.4 = 29.16 \text{ MJ}$ (2 marks)

Total 8 marks

ANSWER 4

- (a) Above the level of the down draught diverter. (1 mark)
- (b) Below the level of the burner. (1 mark)
- (c) Any THREE (1 mark each)
To dilute the products of combustion.
To deflect down draught.
To break the pull of the secondary flue.
To prevent the cooling of the flame. (3 marks)

Total 5 marks

ANSWER 5

- (a) • Energy Safety (1 mark)
- (b) • On the Energy Safety declaration website (1 mark)
- (c) • Gas authentication mark
• Found on the gas appliance gas safety compliance label (2 marks)

Total 4 marks

ANSWER 6

- (a) • Leakage test. 2.5 kPa (2 marks)
• Pipework test on new pipework. 7 kPa (2 marks)
• Installation test. 2.5 kPa (2 marks)
• Final connection test. 2.5 kPa (2 marks) (8 marks)
- (b) 7.5 kPa (1 mark)
- (c) • Retest the pipework at higher pressure.
• Check the appliance regulators are rated for the pressure increase.
• Check the appliance operating pressures/re-commission. (3 marks)
- (d) 0.25 kPa (1 mark)

Total 13 marks

ANSWER 7

(a) (i) Flame recification

(ii)

Letter	Number
A	1
B	16
C	9
D	22
E	12
F	4
G	5
H	18
I	6
J	13

(b) (i) Mercury vapour valve

(ii)

Letter	Number
K	17
L	19
M	7
N	20
O	15
P	10
Q	23
R	11

(c) (i) Thermoelectric flame failure

(ii)

Letter	Number
S	24
T	25
U	14
V	26
W	2
X	3
Y	8
Z	21

(1 mark each name, ½ mark each number)

Total 16 marks

ANSWER 8

(a) Any FOUR (2 marks each)

Thermostat type:

- Rod and tube

Appliance:

- Storage water heater

Thermostat type:

- Bimetallic

Appliance:

- Central heating system

Thermostat type:

- Liquid expansion

Appliance:

- Oven, cooker, space heater, deep fryer

Thermostat type:

- Thermistor

Appliance:

- Space heater, continuous flow water heater

(8 marks)

(b) Any THREE (1 mark each)

- Flame failure
- Tip over switch
- Oxygen depletion device
- Over heat device

(3 marks)

(c) Any THREE (1 mark each)

- To enable the installation to be tested.
- To set or check pressures for the installation.
- To set or check pressures for the appliance.
- To trace leaks.

(3 marks)

Total 11 marks

ANSWER 9

(a) Any FOUR (1 mark each)

- Roofs
- Claddings
- Ceilings materials
- Flooring
- Heat barriers
- Flue rope
- Flues
- Lagging

(4 marks)

(b) • Taking in asbestos fibres, causing lung damage.

(2 marks)

(c) Any FOUR (1 mark each)

- Construction work with a risk of falling 5 m or more.
- Erecting or dismantling scaffolding with a risk of falling 5 m or more.
- Use of a lifting appliance where the appliance has to lift a mass of 500 kilograms or more a vertical distance of 5 m or more.
- Work in any pit, shaft, trench or other excavation in which any person is required to work in a space more than 1.5 m deep and having a depth greater than the horizontal width at the top.
- Work in any drive, excavation, or heading in which any person is required to work with a ground cover overhead.
- Work involving the use of explosives, or storage of explosives for use.
- Work that in which a person breathes compressed air, or respiratory medium other than air (not diving).
- Work that in which a person breathes compressed air, or respiratory medium other than air (diving).

(4 marks)

(d) Any TWO (1 mark each)

- An isolating transformer.
- A mains forced earth circuit that is monitored.
- A residual current device (RCD).

(2 marks)

Total 12 marks

ANSWER 10

Any FOUR (1 mark each)

- Under-sized pipework.
- Insufficient supply cylinders volume.
- Undersized meter.
- Blocked pipework.
- Faulty regulator.
- Cold environment, lack of vaporisation.

Total 4 marks

SECTION B

1. C Excess flow device.
2. E The contamination of air supply to a burner by the products of combustion.
3. A 28.8 MJ.
4. D 60°C
5. D 1.2 m.
6. A 10 MJ/h.
7. E The regulator diaphragm has ruptured.
8. B Natural draught appliances.

Total 8 marks