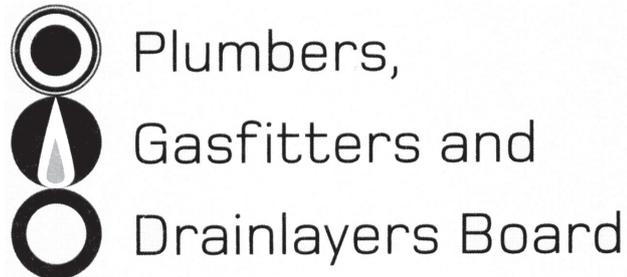


No. 9193



REGISTRATION EXAMINATION, NOVEMBER 2017
TRADESMAN GASFITTER

ANSWER SCHEDULE

ANSWER 1

- (a) Any SIX (1 mark each)
- The cylinders are empty.
 - The regulator is faulty.
 - The pressure on the regulator is set incorrectly.
 - Blockage in the gas line.
 - Blocked burner injectors.
 - Wrong sized injectors.
 - Possible appliance regulator installed and adjusted incorrectly.
 - The pipework is incorrectly sized.
 - Incorrect aeration.
 - Over demand of gas supply. (6 marks)
- (b) Any ONE (1 mark)
- The household water supply pressure is too low.
 - Impellor / filter blocked. (1 mark)
- (c) • The appliance fan and heat exchanger has become full of dust and debris, slowing the flow of air through the heater. (1 mark)

Total 8 marks

ANSWER 2

- (a) (i) • When gas flows into the regulator it pushes the diaphragm against the spring. When the diaphragm moves harder against the spring, it closes the valve in the diaphragm, stopping gas flow. (2 marks)
- (ii) • The screw is wound in to increase gas outlet pressure by increasing the force exerted on the spring. (2 marks)
- (iii) • The spring is held between the adjustment screw and the diaphragm. The spring acts as force against the gas pressure pushing on the diaphragm. (2 marks)
- (iv) • When the diaphragm moves up and down the area above the diaphragm changes in volume. The breather hole allows air to enter or escape at a set rate. (2 marks)
- (b) (i) • To maintain a constant pressure. (1 mark)
- (ii) • To reduce the cylinder pressure to a level suitable for the second stage regulator to manage more accurately and maintain a constant pressure. (1 mark)
- (iii) • To receive gas from the first stage regulator and further reduce that pressure to installation operating pressure and maintain a constant pressure. (1 mark)
- (iv) • To reduce cylinder pressure to installation operating pressure. (1 mark)
- (v) • To reduce the installation pressure to the required burner operating pressure and allow for adjustments to pressure as required by the appliance. (1 mark)

Total 13 marks

ANSWER 3

- (a) • 1.13 kPa (1 mark)
- (b) • 2.75 kPa (1 mark)
- (c) • Where the piping is embedded in a concrete wall or floor. (1 mark)
- (d) • Air.
• Natural gas.
• An inert gas. (3 marks)
- (e) • Size in millimetres, common to all components in a piping system.
A convenient number for reference purposes. (1 mark)

Total 7 marks

ANSWER 4

- (a) • The water heater shall not exceed 0.4 MJ/h/m³ of room volume.
• Not in or in any way ventilated to any sleeping area.
• Not fitted under shelves. Not be less than 150 mm from side walls. Not be less than 300 mm below ceilings. (3 marks)
- (b) • Accessible - Access gained without hazard or undue difficulty.
• Readily accessible - Access gained without hazard or undue difficulty, or use of a tool. (1 mark)
- (c) • 2.75 kPa (1 mark)
- (d) • 750 mm (1 mark)

Total 6 marks

ANSWER 5

- (a) (i) • WorkSafe (1 mark)
- (ii) Any ONE (1 mark)
 - 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).

(1 mark)

- (b) Any THREE (1 mark each)
- Animal droppings
 - Dead animals
 - Mould
 - Raw sewage
 - Contaminated soil
- (3 marks)
- (c)
- Mobile scaffold/scaffold
 - Elevated work platform/cherry picker
 - Fall restraint system
 - Fall arrest system
 - Net
 - Mesh
- (4 marks)
- Total 9 marks**

ANSWER 6

- (a) Sketch to show
- Bolts (½ mark)
 - Gasket (½ mark)
 - Two flanges (½ mark)
 - The point of seal (½ mark)
 - A flanged joint. (1 mark)
- (3 marks)
- (b) Any THREE (1 mark each)
- Flared joint
 - Olive coupling
 - Mac union
 - 'O' ring seal compression joint
- (3 marks)
- Total 6 marks**

ANSWER 7

- (a) • To remove residual heat and combustion products from the appliance. (1 mark)
- (b) • To exhaust any unburned gas from the heat exchanger prior to ignition. (1 mark)
- (c) • To stop damage to the appliance if it is operating incorrectly. (1 mark)
- (d) • To ensure that adequate air flow is available for ignition. (1 mark)
- Total 4 marks**

ANSWER 8

- (a) • 12 months (1 mark)
- (b) • 24 months (1 mark)
- (c) • The supervisor must be able to see the supervisee, or must be able to hear the supervisee. (1 mark)
- (d) • 1 April (1 mark)
- (e) Any THREE (1 mark each)
- Pay the required fee.
 - Attend approved CPD.
 - Work under a certifying gasfitter.
 - Complete the licence renewal application. (3 marks)

Total 7 marks

ANSWER 9

- (a) (i) Vol of 2 m × 40 dia = $\pi R^2 \times H = \pi \times 0.02^2 \times 2 = 0.00251 \text{ m}^3$ (½ mark)
- Vol of 9 m × 40 dia = $\pi R^2 \times H = \pi \times 0.02^2 \times 9 = 0.01131 \text{ m}^3$ (½ mark)
- Vol of 2.5 m × 40 dia = $\pi R^2 \times H = \pi \times 0.02^2 \times 2.5 = 0.00314 \text{ m}^3$ (½ mark)
- Vol of 1.5 m × 25 dia = $\pi R^2 \times H = \pi \times 0.0125^2 \times 1.5 = 0.00074 \text{ m}^3$ (½ mark)
- Vol of 3 m × 20 dia = $\pi R^2 \times H = \pi \times 0.01^2 \times 3 = 0.00094 \text{ m}^3$ (½ mark)
- Vol of 2 m × 20 dia = $\pi R^2 \times H = \pi \times 0.01^2 \times 2 = 0.00063 \text{ m}^3$ (½ mark)
- Total Vol = 0.01833 m³ (1 mark)
- (4 marks)
- (ii) 18.43 litres (1 mark)

(b) Name of test	Leakage test (1 mark)		
Pressure of test	10 kPa (1 mark)		
Stabilisation time	2 minutes (½ mark)	Test time	5 minutes (½ mark)
Permitted pressure loss	Answer consistent with volume in (a) (1 mark)		

(4 marks)

Total 9 marks

ANSWER 10

- (a) • The top of the down draught diverter.
• The flue cowl. (2 marks)
- (b) • 3.5 m (1 mark)
- (c) Any THREE (1 mark each)
- Each appliance must have a flame safeguard system.
 - The burners of the appliances must be the same type.
 - Temperature shall not exceed those given in Table 6.5.
 - There must be a means to prevent reverse flow.
 - Appliance must be of the same gas type. (3 marks)

Total 6 marks

ANSWER 11

- (a) Any THREE (1 mark each)
- POL (Prest-O-Lite)
 - QCC (Quick Connection Coupling)
 - Companion (camping-3/8")
 - Clip-on (Kosan)
 - CGA-555 (3 marks)
- (b) • To allow room for vaporisation
• To allow for expansion due to temperature changes (2 marks)
- (c) • As the liquid vaporises it draws latent heat from the surface of cylinder, which cools the cylinder allowing moisture in the air to freeze to the outer surface. (2 marks)
- (d) (i) • Burner
(ii) • Filter
(iii) • Flow rate control valve
(iv) • Over-pressure protection slam shut valve (2 marks)

Total 9 marks

ANSWER 12

- E2
- B2
- G11
- G4

Total 4 marks

ANSWER 13

Any FOUR (1 mark each)

- Manual (matches)
- Electronic spark
- Flash tube
- Peizo
- Hot surface ignition
- Permanent pilot

Total 4 marks

SECTION B

1. E Timber framed buildings.
2. A Methane.
3. C 3rd family.
4. B Carbon and hydrogen.
5. D There is the possibility to interchange between the gases without the need to change the injector size.
6. E Between 20 and 35 mV.
7. C Condensation.
8. D A temperature dependant resistor.
9. C The combustion portion of the heater is room sealed.
10. B 80% of the length of the hose assembly.

Total 10 marks