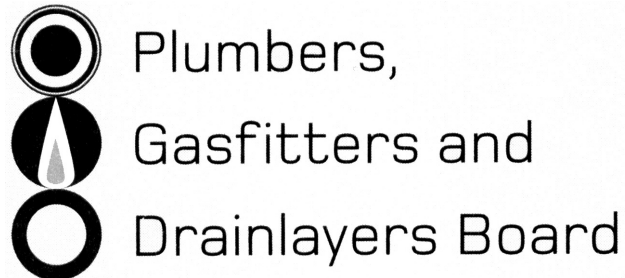


No. 9192



REGISTRATION EXAMINATION, NOVEMBER 2011
LICENSED PLUMBER

ANSWER SCHEDULE

ANSWER 1

- (a) Any FIVE (1 mark each)
- Ensure ladder is in good condition.
 - Correct angle out from wall 1:4.
 - Use ladder on stable/level ground.
 - Tied off to suitable point at top.
 - Footed at bottom.
 - Always keep 3 points of contact with the ladder.
 - Correct height of ladder – 1 metre above platform/roof.
 - Do not over-reach.
 - Do not step on top rung. (5 marks)
- (b) At the power outlet/wall socket, before any extension lead or power tool. (1 mark)
- (c) (i) To completely remove the source of hazard from the environment.
(ii) To provide a barrier between people and the hazard to lessen the likelihood of injury.
(iii) To implement safety procedures and personal protection equipment to reduce the likelihood of or damage if an accident occurs. (3 marks)

Total 9 marks

ANSWER 2

- (a) Any FIVE (1 mark each)
- Positively identify the existing pipework.
 - Ensure the hot water is a tempered supply.
 - Notify all effected users that the water will be turned off.
 - Locate isolating valves and turn water off.
 - Drain water pipes.
 - Fit earth bonding strap. (5 marks)
- (b) Any FOUR (1 mark each)
- Check the shower rose is not blocked with debris or calcium deposits.
 - Check pipework for blockages/airlocks.
 - Replace shower rose with a less restrictive model.
 - Replace shower mixer with a less restrictive model.
 - Increase diameter of pipework feeding the cylinder.
 - Increase the height of the vent/water level inside the vent.
 - Fit a pressure relief valve to the cylinder and increase pressure.
 - If a ceiling tank is fitted, replace with PRV. (2 marks)

(c) Any THREE (1 mark each)

Protected from external corrosion and abrasion.

Allowance for expansion and contraction.

Sealed where they pass through a vapour barrier.

50 years durability.

Lagged/sleeved.

Answers consistent with AS3500 Part 4 Heated water services, Section 4.6.1.3

(3 marks)

Total 10 marks

ANSWER 3

(a)

Material	Quantity
50 mm × 50 mm timber	3 metres or 2 pieces at 1500 mm
100 × 3.75 nail	6 or 8
25 mm × 1 mm Strap	3 straps
8 mm coach screws	6
30 mm × 2 mm thick washer	6

(2½ marks)

(b) 100 mm

(½ mark)

Total 3 marks

ANSWER 4

(a) Convection heat is transferred due to the different densities of the air/water.

The cooler air/water dropping and the warmer rising, making currents that circulate the heat.

(2 marks)

(b) Radiant heat travels through air and space and only heats solid objects.

(2 marks)

(c) Conduction heat is carried from one solid object to another (or from one end of a solid object to the other by direct molecular contact).

(2 marks)

Total 6 marks

ANSWER 5

- (a) A joint that requires the shape of the pipe to change. i.e. Crox, flare or swage. (1 mark)
- (b) A joint made with an olive or ferrule or push fit fittings. (1 mark)
- (c) Complete the table below to show the jointing method for each of the plastic pipe materials listed.

Pipe material	Jointing Method
Polypropylene	Electro-fusion, compression
Polybutylene	Crimp fittings
Cross Linked Polyethylene	Crimp fittings, Sliding sleeve
Unplasticised polyvinyl chloride	Solvent cement welding, Compression
High density polyethylene	Compression fittings, Electro-fusion

(5 marks)

- (d) Glazed ceramic, stainless steel. (1 mark)
- (e) Any TWO (1 mark each)
Non-absorbent, non-porous, vitreous.
Easy to clean.
Non corrosive. (1 mark)

Total 9 marks

ANSWER 6

- (a) When another dwelling in the same building could be damaged if a leak on the hot water cylinder occurs. (1 mark)
- (b) Drawing to correct scale.
Drawing has correct dimensions.
Cut and fold lines clearly marked.
Tabs/Laps provided.
Usable folding sequence. (5 marks)
- (c) Volume = Area of base \times Height
Volume = $0.8 \times 0.6 \times 0.05$
Volume = 0.024 m^3 (2 marks)

Total 8 marks

ANSWER 7

- (a) The clearest/cleanest water possible is drawn off to the pump at all times.
Floating debris on the surface is less likely to enter the delivery pipe. (1 mark)
- (b) The aged/stagnant water and sediment is more likely discharged when tank overflows. (1 mark)
- (c) To stop a siphon being created when the tank overflows. (1 mark)

Total 3 marks

ANSWER 8

- (a) Temperature rise cold to hot = $65 - 15 = 50^{\circ}\text{C}$
Temperature rise cold to mixed water = $55 - 15 = 40^{\circ}\text{C}$

$$\text{Litres of water} = \frac{350 \times 40}{50} = 280 \text{ litres @ } 70^{\circ}\text{C}$$

(1 mark correct transposition)
(1 mark correct temperature rise)
(1 mark correct data entry)
(1 mark correct answer)

Total 4 marks

ANSWER 9

- (a) Self siphonage. (1 mark)
- (b) Momentum. (1 mark)
- (c) Compression. (1 mark)
- (d) Capillary attraction. (1 mark)
- (e) Oscillation. (1 mark)
- (f) Induced siphonage. (1 mark)

Total 6 marks

ANSWER 10

- (a) Urinal.
WC pan.
Kitchen sink.
Items consistent with AS/NZS 3500 Part 2, Appendix D. (3 marks)
- (b) To allow gases to rise to the terminal.
To allow liquid (rain, condensation) in the vent pipe to run down to the waste system (to prevent water traps forming). (2 marks)

Total 5 marks

ANSWER 11

What material is the roof made from, will the runoff affect the material?
Is rain water collected from the roof for human consumption?

Total 2 marks

ANSWER 12

- (a) Positive displacement pumps displace a measured portion of liquid via a moving part such as a plunger or gear. (1 mark)

(b)

Pump	Type
Hydraulic ram	Pos
Gear pump	Pos
Reciprocating pump	Pos
Centrifugal	Non

(2 marks)

- (c) Any THREE (1 mark each)
Pump is not/has lost prime.
Excessive suction lift.
Excessive discharge head.
Pump blocked/debris.
Pump vanes rotating in wrong direction, broken or worn.
Vapour lock. (3 marks)

Total 6 marks

ANSWER 13

Any THREE (1 mark each)

Incorrectly installed wastepipe.

Not running enough water when using the waste disposal.

Not leaving the water running for a period of time after the food has been chopped up to flush it through the waste pipe.

Disposal of unsuitable waste in the disposal unit.

The blades on the waste disposal unit are worn.

Outlet end of waste pipe restricted.

Unsuitable or incorrect waste pipe installation.

Total 3 marks

ANSWER 14

C A hot outlet is opened.

E The pressure downstream from the valve decreases.

G The valve washer is pushed off the seat by the incoming water pressure.

F Water flows through the valve to the hot outlet.

A The pressure at the outlet is regulated by the diaphragm.

D The hot outlet is closed.

B The downstream pressure overcomes the inlet pressure and spring tension.

H The diaphragm pulls the washer onto the seat.

Total 4 marks

SECTION B

1. D m³.
2. C 1000.
3. D Raises the boiling point.
4. A Magnesium.
5. A 450 mm
6. D 1000 mm
7. C 1500 mm
8. E Bed pan washers.
9. C 50 mm.
10. D 32 mm
11. B 25 mm.
12. A The connection point must be at least 50 mm above the overflow level of the highest fixture connected to the discharge stack.
13. E 75 mm.
14. C 3.0 m
15. E 100 mm.
16. B A system where the water is circulated by a pump.
17. B The system can be zoned.
18. A At low level near the middle of the building.
19. B A water tank with an air gap which must be checked annually.
20. D Atmospheric vacuum breaker.

Total 20 marks

