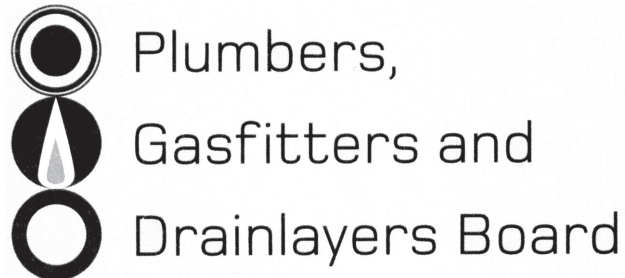


No. 9195



REGISTRATION EXAMINATION, JUNE 2015
CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

- (a) Find gradient = 1.65% or 1:60 (1 mark)
 Calculate Fall = $(6/60) = 0.1$ metres (1 mark)
 Calculate height from ground = $0.75 + 3 + 0.25 = 4$
 $4 - 0.1 = 3.9$ metres (1 mark) (3 marks)
- (b) Gradient 1.25% or 1:80 (1 mark)
 Fall = $(6.8/80) = 0.085$ metres (1 mark)
 Height from floor = $0.25 + 0.5 = 0.75$
 $0.75 + 0.085 = 0.835$ metres (1 mark) (3 marks)
- Total 6 marks**

ANSWER 2

Minimum number of people facilities must be provided for.	Pool area = 250 m ² . 250 × 0.2 = 50 people Seating area = 1200 – 250 = 950 m ² . 950 × 0.35 = 332.5 - (333) people 333 + 50 = 383 people (3 marks)
Minimum Number of females	$382.5 \times 0.60 = 229.50$ - (230) people (½ mark)
Minimum Number of males	$382.5 \times 0.60 = 229.50$ - (230) people (½ mark)

	Basins	WC Pans	Urinals
Male	$2+1 = 3$ (2 marks)	3 (1 mark)	3 (1 mark)
Female	2 (1 mark)	$3 + 2 = 5$ (2 marks)	

Disabled access facilities	
WC Pans	Basins
2 (1 mark)	2 (1 mark)

Total 13 marks

ANSWER 3

- Pipework plan clear and readable. (1 mark)
 Potable and non-potable supply connected to correct outlets. (3 marks)
 All fixtures supplied. (1 mark)
 Correct number and placement of BFP devices. (3 marks)
 Correct number and placement of meters. (3 marks)

Total 11 marks

ANSWER 4

- (a) Any FOUR (1 mark each)
- How to adjust guards.
 - PPE to be worn.
 - Method of isolation – turning on and off.
 - Pre-use inspections.
 - Procedure to be followed in emergency. (4 marks)
- (b) Plan for the job – site risk assessment.
- Action – Develop strategies, rules, PPE to reduce risk.
 - Review – Check to ensure actions are keeping the workplace safe. (3 marks)
- (c) Any FOUR (1 mark each)
- Assess any risks to personal safety.
 - Provide first aid to the victim without endangering yourself.
 - Contact medical help if required.
 - Complete the accident register and any other paperwork or notification necessary.
 - Make any possible changes to ensure incident will not reoccur.
 - Review procedures to check if the changes made are lowering the incident rate. (4 marks)
- (d) (i)
1. Any of the following conditions that amounts to or results in permanent loss of bodily function, or temporary severe loss of bodily function: respiratory disease, noise-induced hearing loss, neurological disease, cancer, dermatological disease, communicable disease, musculoskeletal disease, illness caused by exposure to infected material, decompression sickness, poisoning, vision impairment, chemical or hot-metal burn of eye, penetrating wound of eye, bone fracture, laceration, crushing.
 2. Amputation of body part.
 3. Burns requiring referral to a specialist registered medical practitioner or specialist outpatient clinic.
 4. Loss of consciousness from lack of oxygen.
 5. Loss of consciousness, or acute illness requiring treatment by a registered medical practitioner, from absorption, inhalation or ingestion of any substance.
 6. Any harm that causes the person harmed to be hospitalised for a period of 48 hours or more commencing within seven days of the harm's occurrence. (3 marks)

(e) (i) Any THREE (1 mark each)

Hyperthermia.

Dehydration.

Cramp.

Heat Stress.

Heat Stroke.

Disorientation.

(3 marks)

(ii) Drink water regularly.

Take regular breaks.

Ventilate the environment.

(3 marks)

Total 20 marks

ANSWER 5

$$q = \sqrt{\frac{H \times D^5}{25 \times L \times 10^5}}$$

Use of Box's formula (1 mark)

$$= \sqrt{\frac{4 \times 20^5}{25 \times 12 \times 10^5}}$$

Substitution (2 marks)

$$= \sqrt{0.42667}$$

$$= 0.653 \text{ litres} \quad (2 \text{ marks})$$

Total 5 marks

ANSWER 6

If fixtures discharge to ORG – sized and vented correctly.

Main and branch vents fitted and sized as required.

If fixtures discharge to FWG – sized and vented correctly.

Main and branch drains sized correctly.

Deduct marks for:

- FWG receiving fixtures from another room.
- FWG receiving waste from kitchen sink/toilet.
- Missed fixtures.
- Alteration of drainage plan.

Total 9 marks

ANSWER 7

- Existing basin on level 2 vented – no longer highest fixture.
- WC on ground floor connected to discharge system.
- WC on ground floor vented.
- Highest discharging fixture not vented.
- Remaining fixtures connected and vented as required.

Total 5 marks

ANSWER 8

- (a) Any THREE (1 mark each)

PVB has a spring.

PVB has test points.

No isolating valve on the outlet of an AVB.

Minimum distance of installation height above highest outlet different – AVB 150 – PVB 300.

AVB cannot be pressurised for longer than 12 hours.

(3 marks)

- (b) Water supply connected to a **hot water cylinder** – as the cylinder heats **up pressure increases** and **forces water back upstream**.

Or

Water supply is connected to a **pump** which increase the pressure and forces water back up stream.

(Other correct answers accepted, if applicable)

(2 marks)

Total 5 marks

ANSWER 9

- (a)
- Correct location of panel inlets.
 - Correct location of panel outlets.
 - Panels are connected in parallel.

(3 marks)

- (b) Any ONE (1 mark each)

Panels are less likely to overheat.

Additional panels can be joined to the system more easily.

(1 mark)

- (c) The latitude of the installation.

(1 mark)

- (d) Any FOUR (½ mark each)

Trees/shade on the panels.

Debris.

Sunlight hours of area.

Insulation/Frost. Cooling wind.

(2 marks)

Total 7 marks

ANSWER 10

- (a) For the purpose of this Standard any area subject to bacterial or chemical pollution shall be deemed to be a contaminated area. These areas shall include ash pits, tanks, ponds, manure bins, waste disposal depots, and wastewater treatment works.

The installation of any water service in or through a contaminated area shall not be permitted unless the water service:

- (i) is laid through a watertight, corrosion-resistant conduit of sufficient length and strength to afford adequate protection to the water service; or
- (ii) is fixed not less than 600 mm above the surface of the ground likely to be contaminated.

(2 marks)

- (b) (i) Where two or more water services are installed in a private easement, they shall not cross or be closer than 100 mm to each other.

(1 mark)

- (ii) All pipes and fittings shall be:

- (a) buried to a minimum depth of 300 mm, measured from the proposed finished surface level; or
- (b) surrounded with waterproof, thermal insulation.

(2 marks)

- (iii) 600 mm

(1 mark)

- (iv) (a) Unheated roof spaces;
Unheated cellars;
Locations near windows, ventilators or external doors where cold drafts are likely to occur; and
Locations in contact with cold surfaces such as metal roofs, metal framework, or external metal cladding materials.

(3 marks)

Total 9 marks

SECTION B

1. A 1200 mm
2. D 2500 mm
3. E Tundish
4. B The fixture discharge pipe connects to the floor waste gully below the top of the water seal.
5. D The sum of the unit ratings of the fixtures discharging into the floor waste gully.
6. A 3 kPa
7. C 3 minutes stabilisation followed by a 2 minute test.
8. D 1750 litres
9. C 45°C.
10. E 3 months.

Total 10 marks