No. 9195

Plumbers,
Gasfitters and
Drainlayers Board

REGISTRATION EXAMINATION, JUNE 2022

CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

(a) Any FOUR (1 mark each)
When using solvents.
When creating dust.
When handling asbestos.
When they are unwell.
When they are interacting with someone who is unwell.
When working in a crawl space. (4 marks)

(b) Any THREE (1 mark each)
Use breathing apparatus/compressed air.
Have good ventilation.
Use a gas detector to test air quality.
Ensure the atmosphere is smoke-free.
Wetting down dusty areas. (2 marks)

(c) Any THREE (1 mark each)
Absorption through the skin.
Ingestion – eating/drinking.
Contact with open wounds.
Injection/skin puncture. (3 marks)

Total 9 marks

ANSWER 2

Any fixtures discharging to ORG correct size.
System vented in correct location(s).
FWGs correctly charged.
Underfloor pipework and branches sized correctly.
All fixtures allowed for.
No changes to drainage plan.

Total 9 marks

ANSWER 3

(a)

Valve train	(3 marks)
PLV correctly rated	(1 mark)
CWE correctly rated	(1 mark)
Cylinder thermostat temperature	(1 mark)
Tempering valve, and temperature and distance	(2 marks)
Seismic restraints and measurements	(2 marks)
Safe tray and drain	(1 mark)

(11 marks)

(b) Any THREE (1 mark each)

Replacing an existing wood burner and wetback system.

Replacing and relocating an open-vented water storage heater and reconnecting it to the existing wood burner with a wetback.

Replacing an open-vented water storage heater and adding a wetback where there was no wetback before.

Adding a roof-mounted solar collection panel which will be connected to an existing open-vented water storage heater.

Adding a split heat pump (not a replacement split heat pump) to an existing water storage heater.

Adding a wetback (not a replacement wetback) connected to a water storage heater.

Adding a solar collector to an existing water storage heater (even if the existing water storage heater has provision for solar connection).

(3 marks)

Total 14 marks

ANSWER 4

(a) (i) High hazard has the potential to cause death. (1 mark)

(ii) Medium hazard has the potential to endanger health. (1 mark)

(iii) Low hazard has the potential to cause a nuisance but not endanger health or cause injury. (1 mark)

(b) (i) Diagram shows inlet float valve and overflow point of storage tank.
Measured between bottom of float valve outlet and top of overflow point. (2 marks)

(ii) Minimum height 50 mm. (1 mark)

Total 6 marks

ANSWER 5

Include trap(s). (1 mark)
Discharge pipe size and gradient. (1 mark)
Vent diameter and gradient. (1 mark)
Vent pipe correctly connected to discharge pipe. (1 mark)
Vent pipe correctly terminated. (2 marks)
Relief vent. (1 mark)

Total 7 marks

ANSWER 6

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

$$= \sqrt{\frac{4 \times 20^5}{25 \times 12 \times 10^5}}$$ Substitution (1 mark)

$$= \sqrt{0.42667}$$

= 0.653 litre/s (2 marks)

Total 3 marks

ANSWER 7

Measurement ‘X’ correct (130 mm). (2 marks)
Corrugations crossed according to the wind zone (2 crests finish in trough). (1 mark)
Rubber boot flashing on angle. (1 mark)
Soaker flashing terminating under ridge flashing or cover sheet (250 mm). (2 marks)
Fixing of rubber boot flashing to soaker flashing. (1 mark)

Total 7 marks

ANSWER 8

(a) Any FIVE (1 mark each)
Specified training workers should have before carrying out work at heights.
PPE gear to be used when working at heights.
Individual site assessment procedure for each working at height location.
Supervision requirements (buddy system) for machinery used to access heights.
Emergency procedures should an accident or incident occur.
Procedure for people who do not follow the policy requirements. (5 marks)

(b) Any THREE (1 mark each)
Height – Best practice guidelines for working at height in New Zealand.
Roofs – Best practice guidelines for working on roofs.
Hazardous substances.
Noise in the workplace.
Power-actuated hand-held fastening tools.
Power-operated elevating work platforms.
Manual handling – Code of practice for manual handling.
Asbestos. (3 marks)

Total 8 marks

ANSWER 9

Stack vented through the roof. (1 mark)
FWG is charged. (2 marks)
Bath is vented. (2 marks)
Each fixture discharges to stack or FWG correctly. (5 marks)
Each pipework section correctly sized. (3 marks)

Total 13 marks

ANSWER 10

(a) Any SIX (½ mark each)
Number of people in the home.
Collector area.
Collector thermostat setting.
Environmental factors (climate).
Variable usage.
Orientation of the collector.
Shade.
Distance from collector to storage unit.
Weight of the unit.
Collector area available.
Access for maintenance. (3 marks)

(b) Any FIVE (1 mark each)
Debris in the glass.
Trees grown taller in the area.
Air lock valve functioning.
Selective surface breaking down.
Penetrations on roof/supporting structure – firm and water tight.
Condition of insulation.
Any leaks in collector or pipework connections.
Temperature probe is positioned correctly in its socket and sealed. (5 marks)

Total 8 marks

ANSWER 11

(a) Volume = $\pi \times R^2 \times L$

Section A: Volume = $\pi \times 0.016^2 \times 4 = 0.003217\ m^3$ (½ mark)

Section B: Volume = $\pi \times 0.0125^2 \times 5 = 0.002454\ m^3$ (½ mark)

Section C: Volume = $\pi \times 0.010^2 \times 5 = 0.001571\ m^3$ (½ mark)

Section D: Volume = $\pi \times 0.0075^2 \times 4 = 0.000707\ m^3$ (½ mark)

Section E: Volume = $\pi \times 0.0075^2 \times 8 = 0.001414\ m^3$ (½ mark)

Total volume = $0.009363\ m^3$

= 9.363 litres (1½ marks)

(b) Volume of tank = 1500 litres

No. of milligrams = 1500 × 50 = 75000 (1 mark)

No. of grams = 75 (1 mark)

Total 6 marks

SECTION B

1. E Plumber B.
2. B Eliminate the hazard from the employee's workplace.
3. D 1750 litres.
4. C 45ºC
5. E One heat source can be used for both potable and non-potable hot water supplies.
6. A A pump.
7. D 1500 kPa.
8. C 85 mm.
9. B 10º
10. D 200

Total 10 marks