No. 9195

Plumbers,
Gasfitters and
Drainlayers Board

REGISTRATION EXAMINATION, NOVEMBER 2012

CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

(a) To meter water through the device to detect leaks and unauthorised water use.
Often used on firefighting installations to prevent backflow of stagnant water and ensure building users are not using unmetered/uncharged water from the firefighting supply to feed other building outlets.

(1 mark)

(b) Back pressure back flow is back flow that occurs due to a higher water pressure being achieved downstream (e.g. installation of a pump) causing the water to be forced back against the normal flow direction and into the supply line.

(2 marks)

(c) Back siphonage back flow is back flow that occurs when the water supply pressure drops (e.g. from water main being cut/damaged) and siphons water back from the downstream water pipe installation.

(2 marks)

Total 5 marks

ANSWER 2

Index length	Pressure drop
18 (from scale) + 30 = 48 (accept 46-49.5) (3 marks) Range to be decided once printed for scale	40 – 4 – 5 = 31 (2 marks)

Pipe Section	Total Loading Units	Probable Simultaneous Flow Rate (L/s)	Pipe size DN
A-B	41	0.55	25
B-C	4	0.20	18
B-D	37	0.52	20
D-E	5	0.18	18
E-F	3	0.20	18
D-G	32	0.49	20
G-H	8	0.20	18
G-I	24	0.42	20
I-J	10	0.26	18
J-K	7	0.22	18
K-L	4	0.20	18
I-M	14	0.31	18
M-N	4	0.16	15
N-O	3	0.14	15
O-P	2	0.10	15
M-Q	10	0.26	18
Q-R	2	0.10	15

(1 mark per line) (2/3 = ½ mark)

Total 22 marks

ANSWER 3

(a)

Design number of males	Design number of females
8000 (2 marks)	6000 (2 marks)

	Sanitary fixtures		
	WC Pans	Urinals	Basins
Female	87 (2 marks)	0 marks	40.67 – 41 (2 mark)
Male	24.57 - 25 (2 marks)	43 (2 marks)	42.95 - 43 (2 mark)

(14 marks)

(b) Two (1 mark)

Total 15 marks

ANSWER 4

(a) Any FIVE – 1 mark each
Debris on 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.
Check temperature is positioned correctly in its socket and sealed.
Temp probe correctly located in socket.

(5 marks)

(b) 80 L/hr (1 mark)

Total 6 marks

ANSWER 5

(a) Candidate starts with 9 marks – deduct following marks for errors as listed

Not connecting fixture	2 per fixture
Optional fixture to ORG is not 65 mm	1
Toilets – 100 mm	0.5
Other discharge pipes not 65 mm	1 per fixture (max 3)
Fixtures to FWG not 40 mm	1
Vent incorrect location, size, quantity	1
Main drain not 100 mm	1
Main drain doesn't reduce when possible	1
Un-economical design	3 max
Fixtures discharging to FWG in a different room	2 per fixture
Drains drawn externally from building requiring drainlayer to return to site	9

(9 marks)

(b)

Pipe diameter	Minimum Gradient
40 mm – 65 mm	1:40 or 2.50%
80 mm – 100 mm	1:60 or 1.65%

(1 mark)

(c) Any SIX (½ mark each)

Must not connect directly to the drain or stack.

There must not be a urinal in the same room.

The floor waste must have a removable grate ≥40 mm.

The floor waste must discharge via a ≥40 mm graded discharge pipe.

If terminating internally it must discharge over a tundish connected to a floor waste gully.

If terminating externally it must terminate with 100 mm above the finished surface level and have a flap to prevent vermin entering the pipe.

Located where discharge cannot cause damage or nuisance.

(3 marks)

Total 13 marks

ANSWER 6

(a) Any FIVE (1 mark each)

Category/nature of work being carried out.

Address of work site.

Employer details.

Description of work being undertaken.

Certificate holder details.

Date work due to commence.

Date work due to be completed. (5 marks)

(b) 24 hours (1 mark)

(c) Any FOUR (1 mark each)
A communication device/method – to communicate with the people inside the confined space.
Breathing apparatus and oxygen supply to wear during rescue operation.
A hoist or pulley system for retrieving person from within confined space.
A device for contacting emergency services.
Safety plan/emergency procedure) (4 marks)

(d) Any FOUR 1 mark each
The position of reference points (e.g. the kerb line) may have changed since the plans were drawn.
Regrading of any surface may mean that the depths shown are now incorrect.
Services, particularly cables, may have been moved without the authority or knowledge of their owners.
In many cases service connections are not marked.
Services, marked as straight lines may, in practice, twist and turn; and
In order to avoid too tight a bending radius, cables may have been laid in horizontal loops outside substations, switch-rooms, and at the base of poles, etc.
An error could have been made on the original drawing.
Reproduction may have changed the scale, especially if the plan was obtained from a microfiche slide or digital map or transmitted by facsimile.

(4 marks)

Total 14 marks

ANSWER 7

(a) 25 mm – AS/NZS 3500 Part 1
100 mm – AS/NZS 3500 Part 4 (1 mark)

(b) 300 mm (1 mark)

(c) 600 – (200 + 250) = 150 (1 mark)
150 – 55 = 95 (½ mark)
1900/95 = 20 (1 mark)
Gradient = 1:20 or 5 % (½ mark)

(3 marks)

Total 5 marks

SECTION B

1	D	2 × the diameter of the inlet pipe.
2	E	A kindergarten or preschool.
3	D	7
4	A	When the size of the roof penetration is greater than 85 mm diameter.
5	C	100 mm
6	B	200 litres
7	B	A vent interconnecting the tops of two or more relief vents or stack vents.
8	E	300 mm
9	A	50
10	C	At the base of a downpipe feeding a storage water tank.
11	E	Department of Labour preferred work practice guidelines.
12	C	Eliminate the hazard from the employees workplace.
13	B	Plumber B.
14	A	To recover plant and equipment from the site.
15	E	7 days.
16	B	12 months.
17	B	Hum detectors.
18	A	Orange.
19	E	4.0 m
20	D	500 mm

Total 20 marks