No. 9195

Plumbers, Gasfitters and Drainlayers Board

REGISTRATION EXAMINATION, NOVEMBER 2017

CERTIFYING PLUMBER

ANSWER SCHEDULE

ANSWER 1

(a) (i) A backflow prevention system (1 mark)

(ii) Every 12 months (1 mark)

(iii) The building owner (1 mark)

(iv) Independently Qualified Person (1 mark)

Total 4 marks

ANSWER 2

Fixtures discharging to ORG	
Bath to ORG not 40/50mm	-1
Shower to org not 40/50 mm	-1
Basin to org not 40mm	-1
FWG to ORG not 50mm if only basins	-1
FWG to ORG 65 if taking other fixtures	-1
Venting	
Main vent not 50 mm diameter	-1
Main vent location incorrect	-1
Incorrect number of vents	-1
Fixtures to FWG if used	
FWG receiving fixtures from another room	-3
FWG receiving waste from kitchen sink/toilet	-3
Fixture discharge pipes to FWG incorrect size	- 1 per max 3
FWG not charged	-3
Main and branches	
Main drain not 100 mm	-1
Branch drains not 65 mm	-1
Complete new drainage plan	-9
Extra gully added at head of system	-2
Missed fixtures	- 1 per fixture
No stack for upstairs fixtures	-3
Stack in undesirable location	-1

Total 9 marks

ANSWER 3

Index Length	Pressure Drop
From scale at printing 34-35m	50 - 3 – 5 = 42

Pipe section	Total Loading Units	Probable Simultaneous Flow Rate (L/S)	Pipe size (DN)
A - B	29	0.46	20
B - C	9	0.25	18
C - D	3	0.12	15
C - E	6	0.20	15
E - F	3	0.12	15
E - G	3	0.14	15
G - H	1	0.10	15
B - J	20	0.38	18
J - K	8	0.20	15
J - L	12	0.29	18
L - M	11	0.28	18
M - N	10	0.26	18
N - O	8	0.30	18
N - P	2	0.10	15

(1 mark per line) (⅔ = ½ mark)

Total 19 marks

ANSWER 4

(a) Grey.
Blue.
Red. (3 marks)

(b) Any THREE (1 mark each)
Make sure you have plans of the underground services in the area.
Use a cable and pipe locator to trace electricity cables and metal pipes.
Mark the positions of the cables and pipes using paint or other waterproof marking on the ground.
Look for signs of service connection cables or pipes, e.g. a gas meter or service connection entry into a house or a street light.
Hand dig trial holes (as many as necessary) to confirm the position of services in the area of your work.

(3 marks)

(c) Any FIVE (1 mark each)
Unguided boring.
Directional boring.
Mole ploughing.
Impact moling.
Auger boring.
Insertion.
Thrusting.
Pipe bursting. (5 marks)

(d) The excavation is at a greater depth than 300 mm within 2.2 m of the pole or stay wire of the line.
The excavation is at a greater depth than 750 mm between 2.2 m and 5 m of the pole or stay wire.
The excavation creates an unstable batter.

(3 marks)

Total 14 marks

ANSWER 5

(a) Relief vent installed correctly for lower section of stack.
Relief vent installed correctly for upper section of stack.
Cross relief vents installed correctly at each level required. (3 marks)

(b) 50 mm. (1 mark)

(c)

Total discharge loading for stack	87
Minimum diameter of pipe at point A	100
Maximum length of section B	2.5 m
Maximum length of section C	2 m
Maximum length of section D	6 m
Minimum height of section E	600 mm
Minimum length of section F	1 m or 2 m
Minimum gradient of section F	1:60 or 1.65%
Minimum height of section G	600 mm
Maximum length of section H	2.5 m
Minimum diameter of pipe at point I	100 mm
Maximum length of section J	2.5 m
Maximum length of section K	10 m

(13 marks)

Total 17 marks

ANSWER 6

Pipe section	Number of clips
A – B (20 mm)	10
B – C (20 mm)	12
C – D (15 mm)	4
C – E (15 mm)	16
B – F (20 mm)	9
F – G (15 mm)	13
F – H (15 mm)	15

Total 7 marks

ANSWER 7

(a) (i) Drawing to show:
correct valve train (1 mark)
pipework connecting cylinders in parallel and balanced (2 marks)
relief drain pipe work with tundish. (1 mark)
(4 marks)

(ii) Better flow rates achievable.
All cylinders share the work evenly.
Any unit can be isolated for maintenance with disrupting supply. (3 marks)

(b) Total storage required $= \dfrac{630 \times 0.1 \times 10 \times (42 - 16)}{(70 - 16) \times 80}$ (1 mark)

$= \dfrac{630 \times 0.1 \times 10 \times 26}{54 \times 80\%}$ (1 mark)

$= \dfrac{16380}{43.2}$ (1 mark)

$=$ 379.17 litres (1 mark)

Storage required for each cylinder = 379.17 ÷ 2 = 189.58 litres (1 mark)
(5 marks)

Total 12 marks

ANSWER 8

Drawing to show:	
cold water valve train	(1 mark)
pipes connecting wetback to HWC rising/falling	(1 mark)
indirect coil	(1 mark)
open vent	(1 mark)
tempering valve installed correctly	(½ mark)
top-up water for system.	(1½ mark)
Not indirect	(-3 marks)
No top up water or vent on call	(-3 marks)
Coil not vented.	(-2 marks)

Total 6 marks

SECTION B

1.	A	500 mm.
2.	B	4 m.
3.	A	50.
4.	C	40 mm.
5.	C	45°C.
6.	C	100 mm.
7.	B	200 litres.
8.	E	350 litres.
9.	A	To prevent the system from overheating.
10.	E	A temperature/pressure relief valve.
11.	D	100 mm.
12.	D	54 m.

Total 12 marks