

8202-35 Level 3 Advanced Technical Diploma in Plumbing

8202-035 Level 3 Plumbing - Theory exam

March 2022 Mark Scheme

Q no.	Acceptable answer(s)	Guidance	Max mks	Ref
Q1	<p>1 mark for each of the following, up to a maximum of 3 marks:</p> <ul style="list-style-type: none"> • Erroneous measurements - This is a result of a water meter being bypassed or tampered with and water is, in effect, being stolen. (1) • Contamination - Contamination of water supplies through either inadequate backflow prevention or poor maintenance (1) • Undue consumption - This is associated with a system that is oversized and using more water than necessary (1) 	Award any other acceptable answer	3	331 1.1 AO2
Q2	1 mark for either flow cup or weir cup.		1	331 4.2 AO1
Q3	<p>1 mark for each relevant point, up to a maximum of 3 marks.</p> <p>For example: To avoid stagnation (1) it is important to create flow through both cisterns (1) outlets must be connected on the opposite end to the inlets (1)</p>	Award any other acceptable answer	3	331 2.1 AO2
Q4	<p>1 mark for each relevant point up to a maximum of 2 marks.</p> <ul style="list-style-type: none"> • Direct - Water is boosted directly from the mains (1) • Indirect - Water is pumped from a break cistern (1) which is fed from the main via a FOV. 		2	331 2.1 AO1
Q5	<p>1 mark for each of the following, up to maximum of 3 marks:</p> <ul style="list-style-type: none"> • Single Check Valve (1) • Double Check Valve (1) • RPZ Valve (1) • CA Valve (1) 	Award any other acceptable answer	3	331 3.2/3. 3 AO1

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Q6	1 mark for each of the following: <ul style="list-style-type: none"> Hose union tap - FC3 (1) Washing Machine - FC3 (1) Rain Water Harvesting - FC5 (1) 		3	331 3.1 AO1
Q7	1 mark for each of the following, up to maximum of 4 marks : <ul style="list-style-type: none"> Central: heated and distributed centrally (1) unvented cylinder (1) Local: heated and distributed local to its use (1) above a sink single point heater (1) 	Award any other acceptable answer	4	332 1.1 AO1 & AO2
Q8	2 marks for explanation of either : Bubble top / baffle or Expansion vessel		2	332 1.3 AO2
Q9	1 mark for each explanation of the following, up to a maximum of 3 marks . For example, explanation of: <ul style="list-style-type: none"> D1 Discharge pipework must be maximum 600 mm (1) D2 Discharge pipework must be Minimum 300 mm (1) Full bore isolation valve must be installed (1) Temperature control (1) Comply with Regulation G3 (1) Installation of 3 tier safety (1) 	Award any other acceptable answer	3	332 2.4 AO2
Q10	600 mm (1 mark)		1	332 2.3 AO1
Q11 a)	1 mark for explanation. For example: A motorised valve that will be controlled by a room or cylinder thermostat to allow flow to a hot water cylinder or heating circuit. (1)	Award any other acceptable answer	1	331 1.2 AO2
Q11 b)	1 mark for explanation. For example: Maintains minimum flow-rate through the boiler when alternative pathways are closed (1)	Award any other acceptable answer	1	331 1.2 AO2
Q11 c)	1 mark for explanation. For example: Maintaining a water velocity across the primary circuit enabling independent operation of primary and secondary circuits. (1)	Award any other acceptable answer	1	331 1.2 AO2

Q no.	Acceptable answer(s)	Guidance	Max mks	Ref								
Q12	1 mark for Approved Document Part L of the Building Regulations		1	333 2.1 AO1								
Q13 a)	1 mark for description. For example: The number of times the edge changes in a room every hour (1)	Award any other acceptable answer	1	333 2.2 AO1								
Q13 b)	1 mark for description. For example: The rate of heat transfer through a structure (1)	Award any other acceptable answer	1	333 2.2 AO1								
Q14	2 marks for each description, up to a maximum of 4 marks . For example: <ul style="list-style-type: none"> Improved efficiencies (1) due to low temperatures (1) Reduced maintenance (1) as there are less connections (1) Any other appropriate response	Award any other acceptable answer	4	333 1.3 AO2								
Q15	<table border="1"> <thead> <tr> <th>Waste pipe diameter (mm)</th> <th>Maximum distances (m)</th> </tr> </thead> <tbody> <tr> <td>32 mm</td> <td>1.7 m (accept other units)</td> </tr> <tr> <td>40 mm</td> <td>3.0 m (accept other units)</td> </tr> <tr> <td>50 mm</td> <td>4.0 m (accept other units)</td> </tr> </tbody> </table> 1 mark for each maximum distance, as indicated in the table above.	Waste pipe diameter (mm)	Maximum distances (m)	32 mm	1.7 m (accept other units)	40 mm	3.0 m (accept other units)	50 mm	4.0 m (accept other units)	Accept any unit of measurement (mm/cm/m) to mismatch in units between question and answer table.	3	334 1.1 AO1
Waste pipe diameter (mm)	Maximum distances (m)											
32 mm	1.7 m (accept other units)											
40 mm	3.0 m (accept other units)											
50 mm	4.0 m (accept other units)											
Q16	1 mark for each explanation contributing to the discussion of requirements, up to a maximum of 7 marks : <ul style="list-style-type: none"> 1:40 fall from appliance to macerator (1) Rise vertically from the macerator within 300 m of the outlet (1) Long radius bends on the outlet (1) Flexible connections to the macerator unit (1) 200 mm maximum pan connector if used within a concealed unit (1) No push-fit joints on the outlet (1) 5 amp fuse (1) Non-switchable fuse spur (1) 	Award any other acceptable answer	7	334 1.2 AO2								
Q17	Figure 1 - 1 mark for Ground source heating Figure 2 - 1 mark for Air source heating		2	335 1.1 AO1								

Q no.	Acceptable answer(s)	Guidance	Max mks	Ref
Q18	<p>2 marks for each explanation, up to a maximum of 4 marks. For example:</p> <ul style="list-style-type: none"> • Grey Water Harvesting - Collects the water used in sinks, dishwashers, showers and baths, (1) and then cleans it to plumb straight back into the toilet, washing machine and outside tap (1) • Rain Water Harvesting - Collects the rainwater that would otherwise flow down gutters into the drain (1) then re-used within the home to flush toilets and outside taps. (1) 	Award any other acceptable answer	4	335 1.2 AO2
Q19	<p>For no awardable content, award 0 marks.</p> <p>Level 1 (1-3 marks) Largely descriptive response. Shows a limited understanding of sanitation systems and limited understanding of influencing factors. Limited or no knowledge of technical component terminology. Lacks clarity and structure.</p> <p>Level 2 (4-6 marks) More detailed response describes factors and explains consequences. Shows a good understanding of sanitation systems and good understanding of influencing factors. Good knowledge of technical component terminology and shows clarity and justifications.</p> <p>Level 3 (7-9 marks) Specific detail, examples to show evaluation of factors impact. Shows an excellent understanding of sanitation systems and thorough understanding of influencing factors. Extensive knowledge of technical component terminology and shows clarity and detailed justifications.</p>	<p>Indicative content. For example factors could include:</p> <ul style="list-style-type: none"> • Building lay out and features/plans drawings and specifications • Visual inspection • Safe isolation • Soundness test • Performance test • Operational checks • Hand over • Occupancy and purpose • System type • Legislation • Statutory regulations • Manufacturers technical instructions <p>Award any other acceptable answer</p>	9	AO4