City & Guilds Certificate in Basic Plumbing Studies
Tutor Training Guidance
6129 Level 2 Units & Additional Unit 441
January 2009

This document is for tutors only and is not for dissemination to candidates

City & Guilds is committed to providing support, advice and guidance to our centres that deliver our qualifications. One way we support centres is to issue, when necessary, tutor training guidance to assist in the delivery of our qualifications. The purpose of this tutor training guidance paper is to provide support and guidance to centres on their delivery of the City & Guilds Certificate in Basic Plumbing Studies.

The move to GOLA testing enables City & Guilds to monitor the performance of each question and therefore identify areas of the syllabus which a number of candidates are struggling with. City & Guilds can provide additional guidance and support to centres highlighting subject areas where candidates may need more learning input.

The units covered in this learning input feedback paper are:

Level 2

Unit 221 – Safety in Plumbing Activities
Unit 222 – Key Plumbing Principles
Unit 223 – Common Plumbing Processes
Unit 224 – Cold Water Systems
Unit 225 – Domestic Hot Water Systems
Unit 226 – Sanitation Systems
Unit 227 – Central Heating Systems (Pipework Only)
Unit 228 – Electrical Supply and Earth Continuity
Unit 229 – Sheet Lead Weathering
Unit 230 – Environmental Awareness in Plumbing
Unit 231 – Effective Working Relationships in the Plumbing Industry

Additional Unit

Unit 441 – Employment Rights and Responsibilities

Unit 221 – Safety

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.1	Employer responsibilities	Work at Height Regulations – duty to consider whether other options to avoid working at height are possible	HSE INDG401 publication – Work at Height Regulations
1.1	Employer responsibilities	Employer requirement to provide WC facilities on construction sites	CDM regulations
1.2	Safety legislation	Regulations relating to scaffolding as the Work at Height Regulations	HSE INDG401 publication – Work at Height Regulations
1.2	Safety legislation	CDM regulations as the legislation related to safe management and co-ordination of work on construction sites	HSE INDG411 publication – CDM Regulations
1.3.2B	Scaffolding	Requirement for inspection at 7 day intervals	HSE Information Sheet CIS47 – Inspection and reports
1.3.2C	Mobile tower scaffold	Guard rail to working platform height at least 0.95m high	HSE CIS10 publication – tower scaffolds
1.3.2C	Mobile tower scaffold	Scaffold height limitation in relation to base dimension laid down by scaffold manufacturer	HSE CIS10 publication – tower scaffolds
1.3.2C	Mobile tower scaffold	Height limitation before scaffold requires securing to the building as laid down by scaffold manufacturer	HSE CIS10 publication – tower scaffolds
1.3.2C	Mobile tower scaffold	Maximum height of scaffold laid down by scaffold manufacturer	HSE CIS10 publication – tower scaffolds
1.3.3	Excavations	Support system required when ground conditions indicate there is a risk of collapse	HSE HSG185 publication – safety in excavations

Unit 221 – Safety (continued)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.3.3	Confined spaces	First consideration when faced with confined space work – are there alternatives to entering the confined space	HSE indg258 publication – safe work in confined spaces
1.3.6	First aid	Requirements for providing first aid based on employer initial risk assessment	HSE indg214 publication – first aid at work
1.3.8	Site related hazards	Impact of spring bending on the knees	HSE general guidance on muscular skeletal problems
1.3.8	Site related hazards	Use of vehicle stop blocks to prevent vehicles falling into excavations	HSE HSG185 publication – safety in excavations
1.5	Accident reporting	Employer responsibility to retain accident book once work on a construction site is completed	General h&s guidance
2.4	Cartridge operated tools	Colour coding of explosive cartridges – key safety feature	CSkills Ge70008 publication – cartridge operated tools
2.6	Exposure to hazards	Generic safety term – risk exposure relating to those who may be affected by a work activity or process	General h&s terminology
2.8	Hazardous materials	Legislation relating exposure to asbestos laid down in the Control of Asbestos Regulations	HSE website
2.10.3	Fire extinguishers	Reasons why water based extinguishers should not be used on class B fires	Firesafe publication – Portable Fire Extinguishers Guide

Unit 222 – Key Principles

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.3	Pressure units	Pascal relationship to newtons per square metre	Selected plumbing text books
1.3	Pressure effects	Reduction in pipe diameter in system with constant pressure resulting in increase in velocity after the reduction	Selected plumbing text books
1.9	Water hardness	Temporary hardness in water removed by heating (boiling)	Selected plumbing text books
1.12	Capillarity	Adhesion and cohesive effects of water	Selected plumbing text books
1.13	Mass/weight	Weight of an object being its mass x acceleration due to gravity	Selected plumbing text books
1.13	Density	Density of an object being its mass/volume	Selected plumbing text books
1.13	Conductivity	Heat transfer taking place from a higher to a lower temperature material	Selected plumbing text books
1.14	Properties of materials	High density materials being the better conductor of heat	Selected plumbing text books
1.14	Properties of materials	Conductivity being the ability to transmit heat through solid matter	Selected plumbing text books
1.14	Co-efficient of linear expansion	Calculation procedures using the coefficient of linear expansion	Selected plumbing text books
1.14	Properties of materials	Recognition of pure metals and alloys	Selected plumbing text books
1.15	Electrical principles	Critical/operational feature of a rewirable fuse being the cross-sectional area of the wire	Selected plumbing /electrical text books

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.15	Electrical principles	Simple fuse rating formula being Watts = Volts x Amps	Selected plumbing /electrical text books
1.15	Electrical principles	Instrument used to measure current in a circuit as the ammeter	Selected plumbing /electrical text books

Unit 223 – Common Processes

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.1	Site documents	Difference between site documentation; installation plan, work programme and job specification	Selected plumbing text books
1.2	Protecting customer property	Avoidance of damage to customer property when transporting used radiators in an existing propery	General plumbing procedures
1.4	Communication on site	Actions in the event of a deficiency in site orders	Selected plumbing text books
1.5	Site roles	The positions, roles and responsibilities of the various people, agents and management on site e.g. clerk of works	Selected plumbing text books
1.6	Site documentation	Various documents referred to in the installation process – materials schedules, work programme and site plans	Selected plumbing text books
1.6	Site tool monitoring	The purpose of a tool requisition and it's function	Selected plumbing text books
2.1	Pipe length calculation	Calculating accurate pipe lengths incorporating 90 degree bends	Selected plumbing text books
2.1	Pipe length calculation	Calculating accurate pipe lengths incorporating 90 degree bends	Selected plumbing text books
2.2	Common bend faults	The causes of throating and rippling in machine bends	General plumbing procedures/ selected plumbing text books
2.2	Pipework connections	Correct methods for connecting plastic below ground service pipework	Selected plumbing text books

Unit 223 – Common Processes (continued: 1)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
2.2	Pipework within the building fabric	The correct depths and measurements allowed for pipework notches in timber floor joists	Selected plumbing text books
2.2	Building components	What elements constitute the building fabric	Selected plumbing text books
2.2	Building standards	BS8000 and it's relationship to building quality standards	Selected plumbing text books/ BS
2.3	Waste pipe installation	What types of jointing processes are suitable for the various types of pipe (PVC-U, ABS, Polypropylene)	Selected plumbing text books/ manufacturer catalogues
2.4	Gas registration provider	Purpose of the gas registration provider	HSE website
2.5	Recording work activities	What documents are used to record time spent on site	Selected plumbing text books
2.5	Site roles	The role of the building control officer	Selected plumbing text books
3.1	Contaminated water	Safely dealing with additives to hot/cold water systems	Selected plumbing text books/ manufacturer catalogues
4.3	Liaising with customers	Before isolating supplies informing the appropriate people	Selected plumbing text books/General plumbing procedures
4.3	Liaising with customers	Before isolating supplies informing the appropriate people	Selected plumbing text books/General plumbing procedures
4.3	Liaising with other trades	Informing the appropriate people before work begins	Selected plumbing text books/General plumbing procedures

Unit 223 – Common Processes (continued: 2)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
5.1	Commissioning	Who is responsible for filling out the commissioning data – benchmark records	Selected plumbing text books

Unit 224 – Cold Water

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.3	Pipework materials	R220 soft coils used for underground cold water service pipework	Selected plumbing text books/ manufacturer catalogues
2.1	Measurement/bracketing	Recommended clip spacing distance for 15mm vertical pipework as 1800mm	Selected plumbing text books/ BS
2.1	Measurement/bracketing	Recommended clip spacing distance for 22mm vertical copper pipe as 2400mm	Selected plumbing text books/ BS
2.2	Service entry to building	No prescribed minimum dimension for the proximity of insulated service pipework entering the building to the external wall surface	Selected plumbing text books
2.2	Valve recognition	Recognition of spherical plug valve as service valve	Selected plumbing text books
2.2	Tap fixings	Spacing device used when fixing pillar taps to stainless steel sinks known as a top hat	Selected plumbing text books
2.3	Valve type	Spherical plug valve used as the service valve to a storage cistern	Selected plumbing text books
2.3	Warning pipe	Key size of warning pipe to a small cistern based on the pipe's ability to cope with the flow of water should the inlet valve fail	Selected plumbing text books
2.4	Pipework connections	Normal practice to minimise disruption when extending an existing system to make connections into existing as final item of work	General plumbing procedures

Unit 224 – Cold Water (continued: 1)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
3.3	Permanent decommissioning	No dead-legs in supply pipework when permanently decommissioning water fittings	Selected plumbing text books
4.4	Equipment maintenance	Defective spherical plug valve normally repaired by replacing the complete valve	Selected plumbing text books – non maintenance part
5.4	Equipment maintenance	Re-cutting worn tap seats as a possible solution to dripping tap problems	Selected plumbing text books
6.1	Valve type/use	Possible use of screwdown stop valve as service valve to a storage cistern	Selected plumbing text books
6.1	Water pressure limitations	Supply pressure to water fittings should not exceed that identified by the manufacturer	Selected plumbing text books/ manufacturer catalogues
6.3	System isolation	Isolation takes place at supply stop valve when making repairs to internal cold water supply pipework	Selected plumbing text books

Unit 225 – Hot Water

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.1	Legislation	Legal requirements for installing hot water systems laid down in Water Regulations	Selected plumbing text books
1.2	Input services	Primary circuit to indirect open vented hot water circuit filled from feed and expansion cistern	Selected plumbing text books
2.2	System layout	Recognising pipework layout for a typical direct hot water system	Selected plumbing text books
2.2	System layout	Recognising pipework layout for a typical indirect system with single feed cylinder	Selected plumbing text books
2.2	System layout	Recognising open vent indirect system layout – differences between primary and circuit pipework	Selected plumbing text books
2.2	System layout	Recognising pipework layout for a typical direct hot water system	Selected plumbing text books
2.2	Pipework size	Minimum pipe size of primary cold feed from f&e cistern in open vented indirect hot water system as 15mm	Selected plumbing text books
2.2	Pipework size	Minimum circulating pipe size from small solid fuel back boiler to cylinder as 22mm	Selected plumbing text books
2.2	Pipework size	Minimum hot water pipe size from a small combination boiler as 15mm	Selected plumbing text books
2.3	Pipework configuration	Primary open vent pipe in an indirect hot water system discharges over the f&e cistern	Selected plumbing text books

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
2.3	Valve positioning	No service valve should be fitted to the primary cold feed pipe serving an indirect open vented hot water system	Selected plumbing text books
2.3	Secondary circuit	Operation of the pump in a secondary circuit normally by means of a time clock	Selected plumbing text books
2.4	Soundness test	Calculating soundness test pressure in a hot water system	Selected plumbing text books
2.4	Soundness test	Capping of open pipe ends (open vent) during soundness test to open vented system	Selected plumbing text books
4.3	Equipment maintenance	Key replacement part inside an immersion heater being the thermostat	Selected plumbing text books
5.2	Equipment maintenance	On replacing a cylinder the pipework should be insulated to a distance of 1m from the cylinder	Selected plumbing text books/ Domestic Heating Compliance Guide
6.2	Equipment maintenance	Ascending spray bidet must be removed when connected to supply pipework	Selected plumbing text books/ Domestic Heating Compliance Guide
6.2	Equipment maintenance	A twinflow mixer tap prevents mixing of hot and cold water in the mixer tap body	Selected plumbing text books

Unit 226 – Sanitation

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
2.2	Component recognition	Identification of component as an intumescent collar	Selected plumbing text books/ manufacturer catalogues
2.2	Component recognition	Intumescent collar used to prevent the spread of fire	Selected plumbing text books/ manufacturer catalogues
2.2	Component recognition	Soil manifold can be used to make multiple pipework connections into a stack avoiding crossflow	Selected plumbing text books/ manufacturer catalogues
2.2	Component recognition	Identification of component as an air admittance valve	Selected plumbing text books/ manufacturer catalogues
2.2	Component recognition	Identification of component as a drive-in gutter bracket	Selected plumbing text books/ manufacturer catalogues
2.2	Component recognition	Identification of a WC cistern drop valve	Selected plumbing text books/ manufacturer catalogues
2.3	Soil stack requirements	Minimum soil stack size with one WC fitted with outlet less than 80mm is 75mm	Building Regulations Approved Document H (N in NI)
2.3	Trapping requirements	Minimum seal depth for a basin trap to a discharge stack as 75mm	Building Regulations Approved Document H (N in NI)
2.3	Trapping requirements	Minimum seal depth for a shower trap to a gulley as 38mm	Building Regulations Approved Document H (N in NI)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
2.3	Soil stack requirements	Minimum stack vent size to a 2 storey property as 75mm	Building Regulations Approved Document H (N in NI)
2.3	Pipework requirements	Key feature when using self sealing valves to ensure that pipework is laid to minimum gradient requirements	HEPvO Product & Installation Guide
2.3	Stub stack	Maximum distance between floor level and invert of drain in stub stack system as 1300mm	Building Regulations Approved Document H (N in NI)
2.4	Pipework connection	Identification plastic soil to clay drainage connector	Selected plumbing text books/ manufacturer catalogues
2.4	Pipework connection	Identification of connector from plastic soil to cast iron socket	Selected plumbing text books/ manufacturer catalogues
3.1	Temporary decommissioning	Use of a drain plug for temporarily blanking an open pipe end against noxious smells	Selected plumbing text books
4.3	Equipment maintenance	Identification of a gulley grab as a blockage clearing tool	Selected plumbing text books/ manufacturer catalogues
5.1	Equipment maintenance	The use of a self sealing valve in overcoming the effects of compression at a waste appliance	HEPvO Product & Installation Guide
5.2	Equipment maintenance	Trap required at the connection of a rainwater pipe to a combined drainage system	Selected plumbing text books

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
6.2	System isolation	Use of a drain plug to prevent waste material arriving at the work site when working upstream of the plug	Selected plumbing text books/ general plumbing procedures
6.2	System isolation	Appliances should not be used above the height of the new boss pipe connection to a stack whilst the work is in progress	Selected plumbing text books/ general plumbing procedures

Unit 227 – Central Heating

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.1	Information sources	BS 5449 as a standard providing guidance on aspects of central heating installation in domestic properties	Selected plumbing text books
1.2	Input services	Actual capacity of an f&e cistern in a small property as 18 litres	Selected plumbing text books/ manufacturer catalogues
2.1	Measurement/bracketing	Recommended clip spacing distance for a 15mm vertical copper pipe as 1800mm	Selected plumbing text books/ British Standards
2.1	Pipework materials	R250 half hard lengths copper pipe normally used in smallbore heating systems	Selected plumbing text books/ manufacturer catalogues
2.2	Component recognition	Connection ports to an air separator	Selected plumbing text books/ manufacturer catalogues
2.3	Component recognition	Identification of a thermo-mechanical cylinder thermostat control to a cylinder	Selected plumbing text books/ Domestic Heating Compliance Guide
2.3	Component recognition	Minimum control as a themo-mechanical cylinder thermostat provided when replacing a gravity fed cylinder	Selected plumbing text books/ Domestic Heating Compliance Guide
2.3	Component recognition	Pipe thermostat use as an energy conserver when frost thermostat fitted to a CH system	Selected plumbing text books/ manufacturer catalogues
2.3	Component recognition	Added protection against pressure build-up in an open vented system provided by means of a pressure relief valve	Selected plumbing text books/ manufacturer catalogues

Unit 227 – Central Heating (continued)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
2.5	Soundness test	Calculating soundness test pressure in a CH system	Selected plumbing text books
3.4	Decommissioning	Water supply to an open vented indirect system with double feed cylinder normally at the service valve to the f&e cistern	Selected plumbing text books
4.1	Equipment maintenance	Effects on pump, cold fed and open vent pipe positioning in CH systems	Selected plumbing text books
5.2	Equipment maintenance	Effects of incorrectly positioned domestic (cylinder) return connection in a fully pumped CH system	Selected plumbing text books

Unit 228 – Electrics

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.1	Standards requirements	Maximum diameter for a hole in a timber floor joist as ¼ the joist depth	Selected plumbing/ electrical text books
2.2	Component recognition	Identification of a high breaking capacity fuse	Selected plumbing/ electrical text books
2.2	Component requirements	MCB rating for a 8.5kW electric shower	Selected plumbing/ electrical text books
2.2	Component requirements	Calculation of basic fuse size based on power consumption	Selected plumbing/ electrical text books
2.2	System limitations	Maximum floor area covered by a ring main circuit in a domestic property as 100m²	Selected plumbing/ electrical text books
2.3	Component installation	Maximum embedded cable distance from wall corners etc. as 150mm	Selected plumbing/ electrical text books
2.3	Component installation	Recommended switch/socket height installation in new buildings between 450-1200mm above floor level	Selected plumbing/ electrical text books
3.3	Decommissioning	Test instruments meeting the requirements of HSE GS38 document	Selected plumbing/ electrical text books
3.3	Decommissioning	Processes in the safe isolation procedure	Selected plumbing/ electrical text books

Unit 228 – Electrics (continued 1)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
3.3	Decommissioning	Identification of a proving unit	Selected plumbing/ electrical text books

Unit 229 – Sheet Lead

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.2	Lead safety	Safe access to replace chimney weatherings provided by tower scaffold leading to chimney scaffold	Selected plumbing textbooks/ Work at Height Regulations
2.1	Installation details	Code 4 sheet lead as the minimum thickness for producing a lead bossed front apron	LSA Manual – Rolled Sheet Lead
2.1	Installation details	Calculation of number of soakers required to a weathering to an abutment	Selected plumbing textbooks/ LSA Manual – Rolled Sheet Lead
2.1	Installation details	Minimum baseplate dimensions for a lead slate as 400 x 400mm	LSA Manual – Rolled Sheet Lead
2.1	Installation details	Minimum projection of lead at rear of lead slate under roof material as 100mm	LSA Manual – Rolled Sheet Lead
2.1	Installation details	Coil width from which a lead welded back gutter is normally manufactured as 500mm	LSA Manual – Rolled Sheet Lead
2.1	Installation details	Minimum turn-around distance for a lead welded back gutter at the chimney side as 100mm	LSA Manual – Rolled Sheet Lead
2.1	Installation details	Minimum upstand against the rear of the chimney for a lead welded back gutter as 100mm	LSA Manual – Rolled Sheet Lead
2.1	Installation details	Minimum sheet lead projection onto the roof at the side of the chimney when producing a front apron with deeply contoured tiles as 200mm	LSA Manual – Rolled Sheet Lead

Unit 229 – Sheet Lead (continued 1)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
2.1	Installation details	Minimum turnaround distance at the chimney side when producing a front apron as 100mm	LSA Manual – Rolled Sheet Lead
2.1	Marking out	Minimum turnaround dimension to chimney side cheek when marking out for a lead welded front apron as 150mm	LSA Manual – Rolled Sheet Lead
2.1	Marking out	Minimum upstand dimension at the front of the chimney when marking out for a bossed chimney front apron as 150mm	LSA Manual – Rolled Sheet Lead
2.1	Marking out	Minimum turnaround distance to chimney side cheek when setting out a lead welded chimney back gutter as 100mm	LSA Manual – Rolled Sheet Lead
2.1	Marking out	Identification of the sole to a chimney back gutter	LSA Manual – Rolled Sheet Lead
2.1	Installation details	Number of lapped joints required in a straight length of cover flashing	LSA Manual – Rolled Sheet Lead
2.1	Installation details	Use of a welt at the top rear of a lead slate	LSA Manual – Rolled Sheet Lead
2.2	Fixing requirements	Minimum overlap distance between two cover flashings as 100mm	LSA Manual – Rolled Sheet Lead
2.2	Installation details	Two slides of a sloping roof to an abutment weatherproofed at the ridge with a saddle piece	LSA Manual – Rolled Sheet Lead
2.2	Fixing requirements	Tilting fillet piece used to support the tiles at the rear of a back gutter	Selected plumbing textbooks

Unit 229 – Sheet Lead (continued 2)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
2.2	Forming lead	Identification of a lead welded lap joint	LSA Manual – Rolled Sheet Lead
2.2	Forming lead	During bossing the lead should be reduced by no more than 25% of the original thickness	LSA Manual – Rolled Sheet Lead
2.2	Fixing requirements	Clip spacing interval for abutment flashing in a sheltered position as 500mm	LSA Manual – Rolled Sheet Lead
2.2	Fixing requirements	Lead (silicone) sealant as the key sealant used at masonry wall joints	LSA Manual – Rolled Sheet Lead
2.2	Fixing requirements	Screw and washer fixings used to wide masonry joints over 18mm	LSA Manual – Rolled Sheet Lead
2.2	Fixing requirements	Width of tinned copper clips as 50mm	LSA Manual – Rolled Sheet Lead
3.1	Maintenance	Stainless steel screws and washers for making fixings to wide masonry joints	LSA Manual – Rolled Sheet Lead
3.1	Maintenance	Number of lapped joints required in long cover flashing sections	LSA Manual – Rolled Sheet Lead
3.1	Maintenance	Lead (silicone) sealant as the key sealant used at masonry wall joints	LSA Manual – Rolled Sheet Lead

Unit 230 – Environmental Awareness

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.1.1	Building Regulations	The Domestic Heating Compliance Guide providing detailed information on energy efficient heating and hot water system installation	Domestic Heating Compliance Guide
1.1.1	Building Regulations	Building Regulation Approved Document L (F in NI) dealing with Conservation of Fuel & Power	Planning Portal (DFPNI) website
1.1.2	Building Regulation requirements	Minimum energy efficiency requirement for new gas or oil boilers 86% or above	Domestic Heating Compliance Guide
1.1.2	Water Regulations	Wastage of water a key aim of the Water Supply (Water Fittings) Regulations	Selected plumbing text books
1.1.3	Work procedures minimising wastage	Replacing a traditional boiler with a condensing boiler as a method of reducing fuel consumption	Selected plumbing text books/ general procedure
1.1.3	Work procedures minimising wastage	Pipework to a new hot water storage cylinder to be insulated up to 1m from cylinder connection points	Domestic Heating Compliance Guide
1.2	Fuel types	Possible wood classification type as a renewable fuel	Selected plumbing text books
1.3	Material wastage	Key guidance on the economic use of sheet lead provided by the Lead Sheet Association	LSA website
1.3	Material wastage	Key guidance on the economic use of copper tube provided by the Copper Development Association	CDA website

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.3	Energy wastage	The role of the Energy Savings Trust in promoting energy conservation	EST website
1.8	Environmental awareness	The burning of solid mineral fuels as the largest producer of carbon dioxide of the key fossil fuels	EST website
1.8	Environmental awareness	CFCs as an environmental polluter are likely to be found in fridges/air conditioning units	Selected plumbing text books

Unit 231 – Working Relations

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.1.1	Construction management personnel	A role of the buyer (procurement officer) as the obtaining of quotations from suppliers	Selected plumbing text books
1.1.2	Construction operatives	Glaziers, tilers etc. designated as specialist construction craft operatives	Selected plumbing text books
1.1.2	Construction operatives	General site foreman taking day to day responsibility for all supervisors, operatives on a construction site	Selected plumbing text books
1.1.2	Construction operatives	The role of the bricklayer in fixing masonry materials on construction sites	Selected plumbing text books
1.2.2	Company management structure	Private limited company ultimately run by the board of directors	Selected plumbing text books
1.2.2	Company management structure	Limited company required by law to appoint a company secretary	Selected plumbing text books
1.2.2	Work roles	Design of a large CH system usually carried out by a Building services Design Engineer (Technician)	Selected plumbing text books
1.4.1	Job information - regulations	Part L1 (F1 in NI) of the Building Regulations dealing with the Conservation of Fuel & Power in Dwellings	Planning Portal (DFPNI) website
1.4.1	Job information - regulations	Part H (N in NI) of the Building Regulations dealing with sanitary pipework installation	Planning Portal (DFPNI) website

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.4.1	Job information - regulations	Part J (L in NI) of the Building Regulations dealing with heat producing appliances	Planning Portal (DFPNI) website
1.4.1	Job information – standards	BS 8000 Part 13 as the key code of practice for workmanship on above ground sanitation systems	BS website
1.4.1	Job information – regulations	Water Supply (Water Fittings) Regulations aim to limit the potential contamination of drinking water	Selected plumbing text books
1.4.2	Information sources	Key role of SummitSkills to provide training and information advice to the BSE sector	Selected plumbing text books/ SSkills website
1.4.2	Information sources	SummitSkills as the sector skills council for the BSE sector	Selected plumbing text books/ SSkills website
1.4.2	Information sources	JIB for PMES and its role related to industry pay & conditions	Selected plumbing text books/ JIB for PMES website
1.4.2	Information sources	CIPHE as the professional institute for plumbing & heating	Selected plumbing text books/ CIPHE
1.4.2	Working relationships	The role of the JIB for PMES in resolving employee/employer disputes	Selected plumbing text books/ JIB for PMES website

Additional Unit 441 – Employment Rights & Responsibilities

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
1.2	Building Notification	Self certification of work under Building Regulations via an approved competent persons scheme	Selected plumbing text books/ CLG website
1.3	Insurance coverage for employees	Statutory requirement for the employer to have employers liability insurance	HSE publication HSE40 – Employers Liability Act
2.1	Data protection	When data protection registration is required and exemptions from notification e.g. only for payroll purposes	Information Commissioner's Office website – www.ico.gov.uk
2.1	Business record keeping	What information must be kept on a statutory basis by employers about employees e.g. pay, paternity, maternity leave	ACAS website – www.acas.org.uk
2.2	Employment law	The key differences between the Employment Act, Employment Rights act, Employment Relations Act and Employment Equality Regulations.	ACAS website – www.acas.org.uk – selected plumbing text books
2.3	Health and safety at work	Provision of training before using new power tools and equipment	Selected plumbing text books
2.5	Sickness at work	Provision of a doctors certificate to company after a period of 7 days of sickness	ACAS website – www.acas.org.uk – selected plumbing text books

Additional Unit 441 – Employment Rights & Responsibilities (continued: 1)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
2.6	Employment responsibilities	Requirements of employers on forwarding details of holiday information to employees	ACAS website – www.acas.org.uk – selected plumbing text books
3.1	Industry terminology	The difference between the grouping of industries called mechanical services and building services	Selected plumbing text books
3.1	Industry bodies	Trade associations, institutes and other professional bodies and their roles	Selected plumbing text books
3.2	Industry bodies	The main union representing plumbing employees	Selected plumbing text books/Unite website
3.2	Industry bodies	The role of UNITE in determining employee pay and conditions	Selected plumbing text books/Unite website
3.2	Site card scheme	The role of the JIB in operating the CSCS card scheme	Selected plumbing text books/JIB website
3.2	Site card scheme	Types of plumbing CSCS operative cards	Selected plumbing text books/JIB website
3.2	Industry bodies	The role of the industry's primary pension provider	Selected plumbing text books/ Plumbing pensions website
3.3	Industry bodies	The role of SummitSkills within the plumbing industry	Selected plumbing text books/SummitSkills web site
3.3	Industry bodies	The role of SummitSkills within the plumbing industry	Selected plumbing text books/SummitSkills web site

Additional Unit 441 – Employment Rights & Responsibilities (continued: 2)

Test Specification Objective No.	Learning Area	Question Point Feedback	Suggested Learning Ref.
4.1	Industry bodies	The role of CIPHE within the plumbing industry (registration with the engineering council)	Selected plumbing text books/CIPHE web site
4.1	Industry bodies	The role of SummitSkills within the plumbing industry	Selected plumbing text books/SummitSkills web site
4.2	Plumbing qualifications	Content of the advanced apprenticeship/ level 3 plumbing programme	Selected plumbing text books/SummitSkills web site