

6129-221 Maintain the safe working environment when undertaking plumbing work activities

Duration: **100 mins**

No of items: **50**

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Use safe procedures when working with others	01.01 The general responsibilities of the employer and employee for ensuring safety in the work place.	60
	01.02 The requirements of current safety legislation for the range of work operations.	
	01.03 The potential hazards or risks associated with the range of work locations in which work on systems is undertaken, and the measures to be taken to reduce risk.	
	01.04 General measures to be taken to create safety awareness, company on site policies, and applying and supervising safety practices including measures to report potential safety hazards.	
	01.05 Accident reporting procedures.	
	01.06 Basic first aid procedures.	
02 Use safe working practices	02.01 How to work from general risk assessments and how to apply them in the workplace.	40
	02.02 Safe practices when carrying out work on the range of systems and components.	
	02.03 The range of tools and equipment for installation or maintenance work, their safe use, maintenance requirements, and safety equipment.	
	02.04 The range of tools and equipment whose use is controlled by legislation.	
	02.05 The range of potentially hazardous materials used for system installation or maintenance work, including classification of chemicals under COSHH and working with asbestos.	

	02.06 The methods of identifying potentially hazardous materials and level of risk, including asbestos.	
	02.07 Safety precautions including the use of personal protective equipment.	
	02.08 The legislation or recommendations governing the safe use or disposal of hazardous materials.	
	02.09 The procedures for establishing correct system or component performance and checking against the design specification.	
	02.10 The range of fire extinguishers used for different types of fire and how to extinguish small fires in a safe manner.	
	02.11 Typical evacuation procedures for work locations in which system installation or maintenance work may be carried out.	

6129-222 Key plumbing principles

Duration: **40 mins**

No of items: **20**

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Key plumbing principles	01.01 Properties of water, boiling point, freezing point, behaviour at various temperatures	5
	01.02 Properties of water, relative density, max density and changes of state, latent heat of fusion of ice, latent heat of vapourisation.	5
	01.03 Force and pressure in water, intensity of pressure, pressure head, units of measurement.	10
	01.04 Flow of water in pipes and channels, frictional resistance, principles of self-cleansing velocity.	5
	01.05 Atmospheric pressure, principles of the siphon.	5
	01.06 Measurement of temperature	5
	01.07 Specific heat capacity	5
	01.08 Methods of heat transfer – conduction, convection, radiation.	5
	01.09 Hardness in water – pH values, temporary and permanent hardness.	5
	01.10 Effects of hardness in water on plumbing systems, water treatment and water softeners.	5
	01.11 Electrolytic action and corrosion in systems	5
	01.12 Capillarity in liquids, adhesion and cohesion, surface tension, positive and negative effects of capillarity in plumbing systems.	5
	01.13 Properties of plumbing materials, mass/weight, relative density, specific heat capacity.	5
	01.14 Properties of plumbing materials, coefficient of linear expansion,	15

	heat conductivity, specific heat capacity.	
	01.15 Principles of electrical supply – AC/DC current, units of measurement of voltage, current, resistance, single and three phase supply, domestic electrical supplies, principles of earth continuity bonding, and circuit protection devices.	15

6129-223 Common Plumbing Processes

Duration: **50 mins**

No of items: **25**

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Prepare work locations for the installation of systems and components	01.01 The sources of information on the preparatory work necessary for the system or component installation.	32
	01.02 How to protect customer's property or the building fabric prior to the work commencing.	
	01.03 How to ensure that the customer is fully briefed on all aspects of the installation programme.	
	01.04 The tools, equipment, materials and components required for the system installation. Order and supply advice, delivery, and checking procedures.	
	01.05 The actions to be taken should materials not be available at site to commence the installation activity.	
	01.06 Secure storage procedures for tools, equipment, materials and components. Basic stores procedures to ensure security and to minimise loss or wastage.	
	01.07 The actions to take in the event of a suspected gas danger – incorrectly installed appliance, incorrect discharge of products of combustion/incorrect combustion, and leakage.	
02 Carry out the installation of systems and components	02.01 How to measure and record installation and site details for prefabrication purposes.	44
	02.02 The industry practices and work standards for fabricating and installing system components.	
	02.03 The positioning and fixing requirements for system components to conform to the system design and intended functions.	

	02.04 Methods of working which protect the building décor, customer property and existing systems or components.	
	02.05 Job management structures and methods of reporting and recording job progress or problems delaying progress.	
	02.06 The care and maintenance requirements of tools and equipment, and checks for safe condition.	
03 De-commission systems	03.01 How to safely collect and dispose of system contents that may be hazardous to health or the environment.	4
04 Establish maintenance/requirements for systems and components	04.01 The range of information that should be available on the routine and non-routine service and maintenance requirements of systems and components.	12
	04.02 How to plan maintenance procedures to minimise interference with system operation and customer routines.	
	04.03 How and when to liaise with others during maintenance activities.	
05 Carry out the maintenance of components	05.01 How to complete records and reports of the maintenance of systems and components.	4
06 Diagnose the cause and rectify faults in systems and components	06.01 The work procedures for the rectification of faults in systems or components which will ensure minimum disruption to customers and routines.	4

6129-224 Cold water systems

Duration: **80 mins**

No of items: **40**

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Prepare work locations for the installation of systems and components	01.01 The sources of information on the preparatory work necessary for the system or component installation.	10
	01.02 The input services or supplies required for new systems or components or adding components to existing systems. How to confirm that supplies are adequate.	
	01.03 The tools, equipment, materials and components required for the system installation – order and supply advice, delivery and checking procedures.	
02 Carry out the installation of systems and components	02.01 How to measure and record installation and site details for prefabrication purposes.	46
	02.02 The industry practices and work standards for fabricating and installing system components.	
	02.03 The positioning and fixing requirements for system components to conform to the system design and intended functions.	
	02.04 The procedures required for connecting to input services or connecting pipework into existing systems	
	02.05 The range of tests used to confirm the soundness of systems and components and how to use the range of soundness test equipment.	
03 De-commission systems	03.01 The importance of confirming the system design, specification, functions and outcomes of suspending the operation of the system.	10
	03.02 The need to liaise with others whose procedures or routines may be affected by the suspension of the system operation.	
	03.03 De-commissioning procedures for temporary and permanent de-	

	commissioning of systems.	
	03.04 The precautions to ensure that de-commissioned systems do not prove a safety hazard, including measures to prevent systems being bought into operation and safety and warning notices.	
04 Establish maintenance/requirements for systems and components	04.01 The range of information that should be available on the routine and non-routine service and maintenance requirements of systems and components.	15
	04.02 The maintenance procedures across the range of systems and components.	
	04.03 How to plan maintenance procedures to minimise interference with system operation and customer routines.	
	04.04 The materials required for routine maintenance.	
	04.05 The tools and equipment required for routine maintenance operations.	
05 Carry out the maintenance of components	05.01 How to use performance specifications for systems and components, and maintenance procedures necessary to restore or maintain the continued performance of systems and components.	10
	05.02 The maintenance procedures necessary to ensure compliance with industry requirements for routine and non routine service and maintenance activities.	
	05.03 How to complete records and reports of the maintenance of systems and components.	
	05.04 The action to take when the system or component does not work to full performance specification.	
06 Diagnose the cause and rectify faults in systems and components	06.01 How to interpret information on system or component performance, including advice from users, visual inspections or checks or diagnosis tests to locate faults.	10
	06.02 The work action and sequences required to rectify faults in systems and components.	
	06.03 How to isolate unsafe systems and components.	

6129-225 Domestic hot water systems

Duration: 70 mins

No of items: 35

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Prepare work locations for the installation of systems and components	01.01 The sources of information on the preparatory work necessary for the system or component installation.	12
	01.02 The input services or supplies required for new systems or components or adding components to existing systems. How to confirm that supplies are adequate.	
	01.03 The tools, equipment, materials and components required for the system installation – order and supply advice, delivery and checking procedures.	
02 Carry out the installation of systems and components	02.01 How to measure and record installation and site details for prefabrication purposes.	49
	02.02 The industry practices and work standards for fabricating and installing system components.	
	02.03 The positioning and fixing requirements for system components to conform to the system design and intended functions.	
	02.04 The range of tests used to confirm the soundness of systems and components and how to use the range of soundness test equipment.	
03 De-commission systems	03.01 The importance of confirming the system design, specification, functions and outcomes of suspending the operation of the system.	6
	03.02 The precautions to ensure that de-commissioned systems do not prove a safety hazard, including measures to prevent systems being brought into operation and safety and warning notices.	
04 Establish maintenance/requirements	04.01 The range of information that should be available on the routine and non-routine service and maintenance requirements of systems and	15

for systems and components	components.	
	04.02 The maintenance procedures across the range of systems and components.	
	04.03 The materials required for routine maintenance and sources of information on the materials required for routine maintenance operations.	
	04.04 The tools and equipment required for routine maintenance operations.	
05 Carry out the maintenance of components	05.01 How to use performance specifications for systems and components, and maintenance procedures necessary to restore or maintain the continued performance of systems and components.	9
	05.02 The maintenance procedures necessary to ensure compliance with industry requirements for routine and non routine service and maintenance activities.	
	05.03 The action to take when the system or component does not work to full performance specification.	
06 Diagnose the cause and rectify faults in systems and components	06.01 How to interpret information on system or component performance, including advice from users, visual inspections or checks or diagnosis tests to locate faults.	12
	06.02 The work action and sequences required to rectify faults in systems and components.	
	06.03 How to isolate unsafe systems and components.	

6129-226 Sanitation systems

Duration: 70 mins

No of items: 35

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Prepare work locations for the installation of systems and components	01.01 The sources of information on the preparatory work necessary for the system or component installation.	9
	01.02 The input services or supplies required for new systems or components or adding components to existing systems. How to confirm that supplies are adequate.	
	01.03 The tools, equipment, materials and components required for the system installation – order and supply advice, delivery and checking procedures.	
02 Carry out the installation of systems and components	02.01 How to measure and record installation and site details for prefabrication purposes.	60
	02.02 The industry practices and work standards for fabricating and installing system components.	
	02.03 The positioning and fixing requirements for system components to conform to the system design and intended functions.	
	02.04 The procedures required for connecting to input services or connecting pipework into existing systems.	
	02.05 The range of tests used to confirm the soundness of systems and components and how to use the range of soundness test equipment.	
03 De-commission systems	03.01 The importance of confirming the system design, specification, functions and outcomes of suspending the operation of the system.	6
	03.02 The precautions to ensure that de-commissioned systems do not prove a safety hazard, including measures to prevent systems being bought into operation and safety and warning notices.	

04 Establish maintenance/requirements for systems and components	04.01 The maintenance procedures across the range of systems and components.	12
	04.02 The materials required for routine maintenance and sources of information on the materials required for routine maintenance operations.	
	04.03 The tools and equipment required for routine maintenance operations.	
05 Carry out the maintenance of components	05.01 The maintenance procedures necessary to ensure compliance with industry requirements for routine and non routine service and maintenance activities.	6
	05.02 The action to take when the system or component does not work to full performance specification.	
06 Diagnose the cause and rectify faults in systems and components	06.01 How to interpret information on system or component performance, including advice from users, visual inspections or checks or diagnosis tests to locate faults.	9
	06.02 How to isolate unsafe systems and components.	

6129-227 Central heating systems (pipework only)

Duration: 60 mins

No of items: 30

Assessment type: Multiple Choice (Closed book)

Outcome/ Section	Underpinning Knowledge	%
01 Prepare work locations for the installation of systems and components	01.01 The sources of information on the preparatory work necessary for the system or component installation.	12
	01.02 The water supplies required for new systems or components or adding components to existing systems. How to confirm that water supplies are adequate.	
	01.03 The tools, equipment, materials and components required for the system installation – order and supply advice, delivery and checking procedures.	
02 Carry out the installation of systems and components	02.01 How to measure and record installation and site details for prefabrication purposes.	52
	02.02 The industry practices and work standards for fabricating and installing system components.	
	02.03 The positioning and fixing requirements for system components to conform to the system design and intended functions.	
	02.04 The procedures required for connecting to input services or connecting pipework into existing systems.	
	02.05 The range of tests used to confirm the soundness of systems and components and how to use the range of soundness test equipment.	
03 De-commission systems	03.01 The importance of confirming the system design, specification, functions and outcomes of suspending the operation of the system.	12
	03.02 The need to liaise with others whose procedures or routines may be affected by the suspension of the system operation.	
	03.03 The potential hazards that could arise from de-commissioning	

	activities and the checks to be carried out before de-commissioning takes place.	
	03.04 The precautions to ensure that de-commissioned systems do not prove a safety hazard, including measures to prevent systems being bought into operation and safety and warning notices.	
04 Establish maintenance/requirements for systems and components	04.01 The maintenance procedures across the range of systems and components.	3
05 Diagnose the cause and rectify faults in systems	05.01 How to interpret information on system or component performance, including advice from users, visual inspections or checks or diagnosis tests to locate faults.	15
	05.02 The work action and sequences required to rectify faults in systems and components.	
	05.03 The measures to ensure that systems do not present a safety hazard to potential users, or the workforce, when carrying out rectification procedures.	
	05.04 How to isolate unsafe systems and components.	

6129-228 Electrical supply and earth continuity

Duration: 60 mins

No of items: 30

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Prepare work locations for the installation of systems and components	01.01 The sources of information on the preparatory work necessary for the system or component installation.	30
	01.02 The input services or supplies required for new systems or components or adding components to existing systems. How to confirm that supplies are adequate.	
	01.03 The persons to whom deficiencies in electrical supply and earthing provisions should be reported and procedures for isolating electrical supply.	
	01.03 The tools, equipment, materials and components required for the system installation – order and supply advice, delivery and checking procedures.	
02 Carry out the installation of systems and components	02.01 How to measure and record installation and site details for prefabrication purposes.	50
	02.02 The industry practices and work standards for fabricating and installing system components.	
	02.03 The positioning and fixing requirements for system components to conform to the system design and intended functions.	
	02.04 The range of tests used to confirm the soundness of systems and components and how to use the range of soundness test equipment.	
03 De-commission systems	03.01 The importance of confirming the system design, specification, functions and outcomes of suspending the operation of the system.	12
	03.02 The potential hazards that could arise from de-commissioning activities and the checks to be carried out before de-commissioning takes	

	place.	
	03.03 De-commissioning procedures for temporary and permanent de-commissioning of systems.	
	03.04 The precautions to ensure that de-commissioned systems do not prove a safety hazard, including measures to prevent systems being bought into operation and safety and warning notices.	

6129-229 Sheet lead weathering

Duration: 60 mins

No of items: 30

Assessment type: Multiple Choice (Closed book)

Outcome/ Section	Underpinning Knowledge	%
01 Prepare work locations for the installation of systems and components	01.01 The sources of information on the preparatory work necessary for the system or component installation.	25
	01.02 Regulations and recommendations governing safety in the workplace. General responsibilities of the operative for his/her own safety and that of others.	
	01.03 How to protect customer's property or the building fabric prior to work commencing.	
	01.03 The tools, equipment, materials and components required for the system installation – order and supply advice, delivery and checking procedures.	
02 Carry out the installation of systems and components	02.01 How to measure and record installation and site details for prefabrication purposes.	65
	02.02 The industry practices and work standards for fabricating and installing system components.	
	02.03 The positioning and fixing requirements for system components to conform to the system design and intended functions.	
03 Diagnose the cause and rectify faults in systems and components	03.01 How to interpret information on system or component performance, including advice from users, visual inspections or checks, or diagnosis tests to locate faults.	10

6129-230 Environmental awareness in plumbing

Duration: **40 mins**

No of items: **18**

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Demonstrate environmental awareness within the workplace	01.01 The potential implications for the environment of the work procedures used in installing or maintaining systems or components. To include Building Regulations L1, regulations and specifications for energy conservation, and work procedures.	29
	01.02 Alternative 'low risk' materials, products and procedures.	11
	01.03 Prefabrication and installation methods that reduce material and energy wastage.	17
	01.04 The importance of reporting hazards to the environment that arise from work procedures within the scope of the candidate's area of responsibility and ensuring that appropriate actions are taken.	5
	01.05 The range of information that needs to be passed to the customer to ensure the correct and economical use of energy dependant systems.	5
	01.06 The general advice that can be given to customers on methods of reducing waste of resources, and effecting savings.	11
	01.07 The disposal methods used by the organisation for waste materials.	5
	01.08 Raising environmental awareness.	17

6129-231 Effective working relationships in the plumbing industry

Duration: **40 mins**

No of items: **20**

Assessment type: **Multiple Choice (Closed book)**

Outcome/ Section	Underpinning Knowledge	%
01 Establish, maintain and develop effective working relationships with others	01.01 The range of other people encountered within the work environment with whom it may be necessary to establish working relationships, including people encountered within the control and management of the work environment.	25
	01.02 The different types of management structures for organisations employing M.E.S. labour and the roles and responsibilities of the different individuals within the structure. The structure of the industry and management structures, roles and responsibilities.	15
	01.03 Other persons' expectations of a good working relationship.	10
	01.04 The types of job information that may be requested by others in the workplace, sources of information, methods of accessing information and possible restrictions on passing information to others. Including: Regulations and standards. Other sources of job information, methods of access, information and possible restrictions on passing information to others.	25
	01.05 The forms of communication used for the range of job or company information best suited to its purpose, using the key principles of good communication in work situations, including methods of confirming that the communication has been understood.	5
	01.06 The actions that are necessary to begin, develop, and maintain good working relationships, or restore working relationships.	5
	01.07 The principles of good working relationships and reasons why	5

	relationships may break down.	
	01.08 The actions to take to restore working relationships where a breakdown occurs. Including diversity in the workplace, and support available in the event of breakdown in working relationships.	10

6129-441 Employment rights and responsibilities

Duration: 50 mins

No of items: 25

Assessment type: Multiple Choice (Open book)

Outcome/ Section	Underpinning Knowledge	%
01 Statutory rights and responsibilities.	01.01 Aspects of employment covered by the law – discrimination, employment legislation, and general requirements.	44
	01.02 The industry specific legislation and regulations relevant to the industry.	
	01.03 The legislation that exists to protect the rights and responsibilities of individuals, organisations and the public.	
	01.04 The sources and types of information/advice on employment issues.	
02 Internal (Company) & External (Industry) relationship structures and procedures.	02.01 Information on employee work documentation.	32
	02.02 Grievances at work.	
	02.03 Specific health and safety regulations and codes of practice and the work actions to be taken to comply with these regulations.	
	02.04 Exemptions from the Sex or Race Discrimination Acts which are relevant to the job.	
	02.05 Reporting sickness.	
	02.06 Procedures for obtaining time off work.	
03 Candidate roles within the employing organisation and the industry.	03.01 The main sectors and supply chains within their industry.	16
	03.02 The main types of representative bodies relevant to their industry and the employing organisation.	
	03.03 Types of industry organisations – responsibilities to customers.	
04 Career development	04.01 The main career pathways into which their occupation fits.	8
	04.02 The training and development opportunities provided for them by their organisation and what they need to do to make use of them.	

This assessment is intended as open book assessment in which candidates will have access to notes and source materials.

The following list, whilst not exhaustive, includes useful publications which may be used for information on completing this assessment test

Industry Publications

- APHC The Control of Substances Hazardous to Health (Reference Manual)
- BPEC Training and Careers Information
- BPEC Open Learning Task and Workplace Safety Manual
- BPEC Open Learning Course in Health and Safety
- JIB for PMES Working Rules and Grading Definitions

Government Publications

DTI Publications (ACAS publications)

- Small Firms – Employing Staff - A guide to regulatory requirements
- Consumer advice/trading standards
- Employment Guides for Small Firms – Pack of fact sheets – Employment law and good practice explained by the experts
- ACAS Advisory Handbooks
- The A to Z of Work
- Employing People
- Discipline and Grievances at Work

Statutory requirements and Recommendations

- Building Regulations
- British Standards
- The Construction (Health, Safety and Welfare) Regulations 1996
- The Control of Asbestos at Work Regulations
- The Control of Lead at Work Regulations 1980
- The Control of Substances Hazardous to Health Regulations (COSHH)
- Electricity at Work Regulations

- Gas Safety (Installation and Use) Regulations 1998
- Health and Safety at Work etc. Act
- Manual Handling Operations Regulations
- Reporting of Injuries, Diseases, and Dangerous Occurrences Regulations (RIDDOR)
- Water Supply (Water Fittings) Regulations 1999