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Setting The Standards
for the electrotechnical industry

Network Infrastructure Awareness Assessment

www.ecscard.org.uk

For ECS Network Infrastructure Awareness Assessments
from 01 January 2021

ECS Network Infrastructure Awareness Assessment

Revision Guide

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The ECS Network Infrastructure Awareness Assessment has been devised by industry employers to provide a qualification to support the application of an ECS Network Infrastructure Assistant card.

Full details of all ECS Network Infrastructure card requirements please see www.ecscard.org.uk/Network-Infrastructure

The assessment covers the essential aspects of working practices for people who will be assisting with the installation of network infrastructure projects.

Preparation

This guide should be used to help prepare for the assessment.

Delegates for the ECS Network Infrastructure Awareness assessment are assumed to have a level of knowledge and competency in basic network infrastructure theory and principles. It is strongly advised that all delegates undertake suitable training prior to undertaking the ECS Network Infrastructure Awareness assessment.

The guide contains all the questions that are used to make up the assessment, together with the correct answer and, where applicable, a brief explanation of the answer.

Each assessment uses a selection of the questions from the question bank printed in this guide, all the questions in the assessment are listed in this guide.

Criteria for ECS Network Infrastructure Awareness Assessment

The assessment is designed to test basic awareness of Network Infrastructure installation practice for people assisting with network infrastructure projects.

Multiple choice questions will be based on the following criteria

Assessment area	Number of questions
1. Product Selection	3
2. Requirements for working with containment systems	4
3. Cable laying requirements	4
4. Cable dressing requirements	4
5. Fire regulation requirements	3
6. Safe installation practices – cables	4
7. Safe installation practices – personal safety	4
8. Other services	3
9. Waste Management	1

Assessment Availability

The ECS Network Infrastructure Awareness assessment is available from the JIB, ECA, Unite the Union and JIB Registered and Preferred Training Providers. In addition, some employers may be able to provide the assessments to their directly employed staff.

About the Assessment

Each assessment consists of 30 questions across a range of topics relevant to network infrastructure installation to be completed in 45 minutes. Each question will require the correct answer to be selected from a choice of four possible answers given. The pass mark is 24 (80%) correctly answered questions.

At the assessment

Before sitting the ECS network infrastructure awareness assessment the delegate must provide the following to the invigilator:

- Photographic identification such as a current passport, photo driving license or their valid ECS card.
- National Insurance Number.
- A valid personal email address (for the assessment result confirmation to be sent to the delegate).

The invigilator will take a photograph of the delegate as evidence that they took the assessment and will monitor the delegate during the assessment.

The delegate will be informed of their result at the end of the assessment and will also be able to see the correct answers for the assessment they have taken.

If the delegate is unsuccessful they may take a new assessment when they have prepared for the assessment. A fee is chargeable by the assessment organisation for each assessment taken by the delegate.

Successful delegates may order the ECS Network Infrastructure Assistant card using their online MyECS account or by an employer using the ECS Employer Portal.

www.ecscard.org.uk/Network-Infrastructure

ECS Network Infrastructure Awareness Assessment

Question

Correct Answer

1. Product Selection

1.01 When considering fire performance; Telecommunication cables installed inside a building shall meet the following requirements:

- A** Installation cables shall, as a minimum, meet the requirements of Euro Class Cca-s1b,d2,a2,
- B** Installation cables shall, as a minimum, meet the requirements of Euro Class Dca-s1b,d2,a2,
- C** Installation cables shall, as a minimum, meet the requirements of Euro Class Eca-s1b,d2,a2,
- D** Installation cables shall, as a minimum, meet the requirements of Euro Class Fca-s1b,d2,a2,

Correct Answer = A

Cables once installed in buildings cause a hazard in the event of a fire. To mitigate these risks different classes of cable are constructed differently according to their intended usage. The CPR and EuroClass system is designed to ensure that the right cable type is installed in the right areas. Remember it is the installer who is responsible for the final check that the right cable is being installed.

1.02 When considering fire performance, which type of cable produces the least amount of smoke when burning:

- A** Eca
- B** Cca s1b d2 a2
- C** B2Ca s1a d1 a1
- D** Dca s2 d2 a2

Correct Answer = C

When tested cables are rated for Flames, Heat, Smoke, Droplets and Acidity. The s indicates smoke produced during the smoke test. 1a is the least, followed by 1b, 1, 2 and finally 3 which produces the most smoke.

1.03 Which is NOT a Telecommunication cable?

- A** Cat 5e 4 pair data cable
- B** 3 core 13 amp 230 volt mains cable
- C** 1308 3 pair telephone cable
- D** 2 pair intruder alarm cable

Correct Answer = B

It is always important to ensure that the correct cable for the job is selected and installed. Being able to identify the correct cable to be installed is vital, any error in cable selection can prove costly to the installer.

1.04 Cables installed outside buildings and other structures, not installed in ducts, conduit or another type of cover shall meet the following requirements:

- A** Installation cables shall be UV resistant cables with weather resistant, protective outer sheaths
- B** Installation cables shall be white cables
- C** Installation cables shall be a minimum of Cat 5e and S/FTP
- D** Installation cables shall be a minimum of Cat 6 and F/FTP

1.05 The length of a Class Ea permanent link should not exceed:

- A** 55 meters
- B** 90 meters
- C** 100 meters
- D** 1000 meters

1.06 The length of a Class Ea channel should not exceed:

- A** 55 meters
- B** 90 meters
- C** 100 meters
- D** 1000 meters

1.07 The length of a Class Ea channel with patch cords exceeding 20 meters should not exceed:

- A** 80 meters
- B** 90 meters
- C** 95 meters
- D** 100 meters

1.08 The Rack bonding conductors for a cabinet, frame or rack of ≤ 21 U, shall have a cross-sectional area in accordance with HD 60364-5-54 and shall be:

- A** Of minimum cross-sectional area of 2.5 mm²
- B** Of minimum cross-sectional area of 4 mm²
- C** Of minimum cross-sectional area of 10 mm²
- D** Of minimum cross-sectional area of 16 mm²

Correct Answer = A

Exposed external cables require extra protection from direct sunlight and extreme weather. The outer sheath of the cable will be treated to maximise resistance to wear. The responsibility for the specification of the cable is the designers responsibility.

Correct Answer = B

The EA link is a reference to the performance of the permanently installed cable. To ensure that the performance is guaranteed, the standards define a maximum installed link distance.

Correct Answer = C

The EA channel is a reference to the performance of the permanently installed cable and two patch cords. To ensure that the performance is guaranteed, the standards define a maximum installed link distance. In this case the channel is the permanent link with a patch cord on either end, often referred to as 90+10.

Correct Answer = C

The EA channel is a reference to the performance of the permanently installed cable and two patch cords. To ensure that the performance guaranteed, where long patch cords are used the channel distance is shorter, due to the effect on the electrical characteristics of patch cords being different to that of the permanent cable.

Correct Answer = B

It is a safety issue when earth cables are incorrectly sized, always check the requirements before installing.

1.09 The Rack bonding conductors for a cabinet, frame or rack of > 21 U, shall have a cross-sectional area in accordance with HD 60364-5-54 and shall be:

- A** Of minimum cross-sectional area of 2.5 mm²
- B** Of minimum cross-sectional area of 10 mm²
- C** Of minimum cross-sectional area of 4 mm²
- D** Of minimum cross-sectional area of 16 mm²

1.10 A wall mounted 12 U communication cabinet with a glass door needs a earth bond of:

- A** It does not need one
- B** Of minimum cross-sectional area of 2.5 mm²
- C** Of minimum cross-sectional area of 4 mm²
- D** Of minimum cross-sectional area of 10 mm²

1.11 Which of the following ethernet standards is supported by Cat 5e?

- A** 100baseSX
- B** 100baseT
- C** 10base2
- D** 10base5

1.12 Which cable type should be installed to supply a 10 Gbs link over 500 meters?

- A** Co-ax cable
- B** Fibre Optic cable
- C** Cat 6A cable
- D** Cat 7 cable

1.13 Which cable type should be installed to supply a 10 Gbs link over 2000 meters?

- A** Multi-mode fibre optic cable OM2
- B** Multi-mode fibre optic cable OM4
- C** Single-mode fibre optic cable
- D** Co-ax cable

Correct Answer = D

It is a safety issue when earth cables are incorrectly sized, always check the requirements before installing.

Correct Answer = C

It is a safety issue when earth cables are incorrectly sized, always check the requirements before installing.

Correct Answer = B

Different Classes of cable are able to support different Ethernet standards. If you are unsure if you are installing the correct cable speak to your designer.

Correct Answer = B

Whilst Cat 6a and Cat 7 could support the speed they cannot support it over this distance therefore a fibre link must be installed.

Correct Answer = C

Whilst OM4 could support this speed it cannot support the distance required therefore a single-mode link must be installed.

1.14 Which of the following is NOT a standard size of fibre optic cable?

- A** 9/125
- B** 50/125
- C** 62.5/125
- D** 100/125

Correct Answer = D

9/125 is a Single Mode Cable, 50/125 and 62.5/125 are Multi Mode Cables. 100/125 is not an available cable Core/Cladding size.

1.15 What does the "CPR" in the construction industry stand for?

- A** Cable Product Regulations
- B** Construction Product Requirements
- C** Construction Product Regulations
- D** Construction Protection Regulations

Correct Answer = C

The Construction Products Regulations aim to provide a common technical language to assess the performance of various construction products including data cabling.

1.16 What does the "DoP" in the construction industry stand for?

- A** Declaration of Product
- B** Details of Performance
- C** Declaration of Personnel
- D** Declaration of Performance

Correct Answer = D

The Declaration of Performance describes a products characteristics with relation to its fire resistance.

1.17 The CE marking is required for many products. It shows that these:

- A** Meet worldwide requirements
- B** Were made in the European Union
- C** Meet EU performance requirements
- D** Meet EU safety, health or environmental requirements.

Correct Answer = D

CE marking indicates conformity with health, safety and environmental protection standards for products sold within the European Economic Area.

2. Requirements for working with containment systems

2.01 BSEN 50174-2 states the minimum bend radius for 4-pair balanced cables shall be:

- A** Four times the cable diameter
- B** Eight times the cable diameter
- C** Twelve times the cable diameter
- D** Ten times the cable diameter

Correct Answer = B

Standards exist to ensure technical conformance to installations which in turn creates a network suitable to carry the traffic for which it was designed. If minimum bend radius are exceeded the performance of the cable quickly degrades.

2.02 BSEN 50174-2 states the minimum bend radius for optical fibre cables and coaxial cables shall be:

- A** Four times the cable diameter
- B** Eight times the cable diameter
- C** Ten times the cable diameter
- D** Twelve times the cable diameter

Correct Answer = C

Standards exist to ensure technical conformance to installations which intern creates a network suitable to carry the traffic for which it was designed. If minimum bend radius are exceeded the performance of the cable quickly degrades.

2.03 U or RU is a measurement of hight of equipment designed to fit in to a 19 inch Rack. 1U =

- A** 50 mm or 2 inches
- B** 30 mm or 1 inch
- C** 25 mm or 1 inch
- D** 44.45 mm or 1.75 inches

Correct Answer = D

A U or RU is a standard size when installing equipment into cabinets and racks.

2.04 A cable management system:

- A** Includes ducts and tubes housing, or intended to house, blown information technology cables and/or cable elements
- B** Does not include ducts and tubes
- C** Does not include tubes housing, or intended to house, blown information technology cables and/or cable elements
- D** Includes the boxes or drums the cables are delivered in

Correct Answer = A

A cable management system is composed of anything which is designed to contain or support the cabling along its route.

2.05 The grids of suspended ceilings shall:

- A** Not be used as support for pathway systems
- B** Be used as support for multiple cables
- C** Be used as support for devices within the suspended ceiling
- D** Be used as support for pathway systems

Correct Answer = A

It is NOT good practice to loose lay cables above suspended ceilings. Containment systems should be permanently affixed to the fabric of the building.

2.06 Bonding between sections of metallic containment shall be carried out in accordance with:

- A** BS 50174-2
- B** ISO 11801
- C** BS EN 57921
- D** BS EN 50173

Correct Answer = A

Standards exist to ensure technical conformance to installations which in turn creates a network suitable to carry the traffic for which it was designed.

2.07 According to BS EN 50174, the location of cabinets, frames and racks shall:

- A** Provide a minimum clearance of 1 m on all faces where access is required
- B** Provide a minimum clearance of 1.2 m on all faces
- C** Provide a minimum clearance of 1.2 m on all faces where access is required
- D** Provide a minimum clearance of 2 m on all faces where access is required

Correct Answer = C

Standards dictate the minimum safe clearances required around cabinets, frames and racks.

2.08 According to BS EN 50174, Cabinets, frames and racks shall not be installed:

- A** Outside
- B** On a roof
- C** In toilet facilities
- D** In a basement

Correct Answer = C

Standards contain a wealth of information giving guidance on best practice installation practices, if in doubt consult standards.

2.09 According to BS EN 50174, Pathways constructed using tray-work shall be located to:

- A** Be fixed flush to the fixing surface
- B** Provide a minimum clearance of 50 mm from the fixing surface
- C** Provide a minimum clearance of 25 mm from the fixing surface
- D** Not provide a minimum clearance of 25 mm from the fixing surface

Correct Answer = C

Standards contain a wealth of information giving guidance on best practice installation practices, if in doubt consult standards.

2.10 According to BS EN 50174, Indoor pathways constructed using conduit systems with bends should provide access at intervals of:

- A** Not greater than 12 m to enable the use of draw-boxes
- B** Not greater than 90 m to enable the use of draw-boxes
- C** Greater than 12 m to enable the use of draw-boxes
- D** Greater than 20 m to enable the use of draw-boxes

Correct Answer = A

Standards contain a wealth of information giving guidance on best practice installation practices, if in doubt consult standards.

2.11 According to BS EN 50174, For pathway systems, where manufacturer's instructions do not exist, that provide non-continuous support (e.g. basket, ladder or hooks):

- A** The maximum distance allowed between supporting elements of the pathway system is 500
- B** The maximum distance allowed between supporting elements of the pathway system is 1000 mm
- C** The maximum distance allowed between supporting elements of the pathway system is 2000 mm
- D** The maximum distance allowed between supporting elements of the pathway system is 1500 mm

Correct Answer = D

Standards contain a wealth of information giving guidance on best practice installation practices, if in doubt consult standards.

2.12 According to BS EN 50174, For pathway systems, where manufacturer's instructions do not exist, that provide continuous support (e.g. trays):

- A** The stacking height shall not exceed 50 mm
- B** The stacking height shall not exceed 100 mm
- C** The stacking height shall not exceed 150 mm
- D** The stacking height shall not exceed 500 mm

Correct Answer = C

Standards contain a wealth of information giving guidance on best practice installation practices, if in doubt consult standards.

2.13 The selection of cable management systems shall take into account which standard:

- A** The MICE environmental classification of BS 50310
- B** The MICE environmental classification of BS 50173
- C** The MICE environmental classification of BS 6701
- D** The MICE environmental classification of BS 50174

Correct Answer = B

Standards exist to ensure technical conformance to installations which in turn creates a network suitable to carry the traffic for which it was designed.

2.14 According to BS EN 50174, conduits shall not:

- A** Contain more than three bends of up to 90° max. between pulling points
- B** Contain more than four bends of up to 90° max. between pulling points
- C** Contain more than two bends of up to 90° max. between pulling points
- D** Contain more than one bend of up to 90° max. between pulling points

Correct Answer = C

If conduit runs contain too many bends or not enough pull boxes it is not possible to correctly and safely install data cables which could become stretched, snagged or damaged during installation.

2.15 According to BS EN 50174, conduits shall not:

- A** Be subject to cumulative changes in direction of more than 90° between pulling points
- B** Be subject to cumulative changes in direction of more than 180° between pulling points
- C** Be subject to cumulative changes in direction of more than 270° between pulling points
- D** Be subject to cumulative changes in direction of more than 360° between pulling points

Correct Answer = B

If conduit runs contain too many bends or not enough pull boxes it is not possible to correctly and safely install data cables which could become stretched, snagged or damaged during installation.

2.16 According to BS EN 50174, bundles of cables shall not contain more than:

- A** 19 cables
- B** 24 cables
- C** 48 cables
- D** 100 cables

Correct Answer = B

Where cable bundles become oversized excess heat can build up and excessive interference from other cables can be found.

2.17 According to BS EN 50174, When installing in vertical pathways (e.g. risers), cables should be:

- A** Lowered rather than pulled upwards
- B** Pulled upwards rather than lowered
- C** Lowered rather than pulled upwards
- D** Pulled upwards in bundles

Correct Answer = C

Cables are lowered rather than pulled upwards to minimise strain on the cable to reduce the likelihood of damage.

2.18 In BS 50173 what does M.I.C.E stand for:

- A** Material, Insulation, Couloir, Effect
- B** Measure, Insure, Cut, Erect
- C** Mechanical, Ingress, Climatic/Chemical, Electro Magnetic
- D** Rodent damage protection level

Correct Answer = C

Standards exist to ensure technical conformance to installations which intern creates a network suitable to carry the traffic for which it was designed.

2.19 According to BS EN 50174, the installer shall ensure that:

- A** The pathway systems selected are able to support the mass of the cables to be installed
- B** The pathway systems selected are the correct colour for the cables to be installed
- C** The pathway systems selected are only for the cables to be installed today
- D** The pathway systems selected are 100% bigger than cables to be installed needs

2.20 According to BS EN 50174, the installer shall ensure that the fixings and supporting structures for the pathway systems are suitable:

- A** To support the cables to be installed today
- B** To support the mass of the pathway system to be installed
- C** To support the combined mass of the pathway system and the cables to be installed
- D** To support the combined mass of the pathway system and the cables to be installed times two

Correct Answer = A

If pathways are not correctly fixed to the fabric of the building subsequent installations may increase the load to a point where the containment can no longer be supported and falls from the surface.

Correct Answer = D

If pathways are not correctly fixed to the fabric of the building subsequent installations may increase the load to a point where the containment can no longer be supported and falls from the surface.

3. Cable laying requirements.

3.01 Which fibre optic cable has a core size of 50/125 micrometres (um):

- A** OM1
- B** OM3
- C** OS2
- D** OS1

Correct Answer = B

OS1 and OS2 have Core/Cladding sizes of 9/125. OM1 has a Core/Cladding size of 62.5/125.

3.02 Which category cable has a maximum transmission speed of 10000 Mbps / 10 Gbps:

- A** Cat5e
- B** Cat6
- C** Cat7
- D** Cat6a

Correct Answer = D

Different Classes of cable are able to support different Ethernet standards. If you are unsure if you are installing the correct cable speak to your designer.

3.03 Which cable is commonly used for multicore telephone connectivity?

- A** Cat5e
- B** Cat6a
- C** CW1308B
- D** Cat8

Correct Answer = C

Different Classes of cable are able to support different communications standards. If you are unsure if you are installing the correct cable speak to your designer.

3.04 Cable jacket colours make it faster and simpler to pinpoint which type of cable you are dealing with. Yellow, for instance can identify a what type of fibre?

- A** Multi-mode
- B** OM1
- C** Single-mode
- D** Cat6a

Correct Answer = C

Cable jacket colour can be a useful quick reference. Normal jacket colours include Orange for OM2, Aqua for OM4, Lime Green for OM5 and Yellow for Single-mode. However be aware that many manufacturers will produce cables with different colour sheaths if requested by a client so it is always best to double check by reading the cable information printed on the jacket.

3.05 If you are using a RJ45 connector what type of cable are you working with:

- A** Fibre
- B** Copper
- C** OS1
- D** Multi-mode

Correct Answer = B

An RJ45 connector is a Registered Jack No 45 and is built to a defined standard. These can also be called Ethernet heads, 8P8C or computer jacks amongst other things by some installers.

3.06 Which is the lower value of the bend radius of Cat6 cable?

- A** Minimum bend radius during installation
- B** Minimum bend radius installed
- C** Minimum bend radius during termination
- D** Minimum bend radius during testing

Correct Answer = B

Standards state the minimum bend radius for installed cables. During installation and terminating you may exceed this temporarily, but you must ensure the final installed cable complies with these figures. When testing, modern test equipment will identify areas where bends are too tight and will cause the cables to fail. Further information can also be found from the cable manufacturer.

3.07 In general, the minimum bend radius should not be less than how many times the outer diameter (OD) of a fibre cable:

- A** 2
- B** 8
- C** 10
- D** 12

Correct Answer = C

If cables are installed and minimum bend radius are not maintained the performance of the cable will be affected. Most modern test equipment is sensitive enough to be able to show where this is the case during testing and will lead to the cables failing their tests.

3.08 To maintain a Cat6a performance, minimum bend radius should be how many times the size of the outside diameter (OD) for UTP and shielded cable:

- A** 2
- B** 4
- C** 6
- D** 10

Correct Answer = B

If cables are installed and minimum bend radius are not maintained the performance of the cable will be affected. Most modern test equipment is sensitive enough to be able to show where this is the case during testing and will lead to the cables failing their tests.

3.09 Which cable has a significantly larger minimum bend radius?

- A** 5
- B** 5e
- C** Cat 6
- D** Cat6a

Correct Answer = D

If cables are installed and minimum bend radius are not maintained the performance of the cable will be affected. Most modern test equipment is sensitive enough to be able to show where this is the case during testing and will lead to the cables failing their tests.

3.10 What is the maximum conduit fill ratio recommended by BS EN 50174 to accommodate cable bundle bend radius requirements and allow for future expansion?

- A** 25%
- B** 40%
- C** 60%
- D** 100%

Correct Answer = B

Standards use complex formulas to calculate the most efficient fill ratio for containment systems to ensure cable performance for all installed cabling. When you loose lay 40% capacity into a containment system you would be surprised how full it actually looks because of spaces and gaps between cables.

3.11 In relation to pathways and containment which of these statements is correct?

- A** Only rolled edge tray should be used for copper cables
- B** You should always take the most direct route
- C** The pathways systems shall have smooth surfaces and also be free of burrs, sharp edges or projections that can damage cable insulation and be free of pressure points
- D** There is no need to bond/earth metallic containment

Correct Answer = C

Badly installed containment and pathways are the most likely cause of damage to cables during installation.

3.12 What factors would determine the choice of cables type/category?

- A** Cost
- B** Ease of install
- C** Bandwidth
- D** What is already installed

Correct Answer = C

A designer will probably be influenced by all of these factors, but as an installer your primary driver should be to provide the service (bandwidth) required.

3.13 Network connectivity is determined by?

- A** Standards compliance
- B** Budget
- C** Client preference
- D** All factors

Correct Answer = D

As an installer you will be given the Network specification, but the designer will have had to consider many different factors to arrive at the final specification.

3.14 Which of these H&S issues could arise when using fibre optic cables?

- A** Electrocution
- B** Eye damage
- C** Crush injury
- D** Back injury

Correct Answer = B

When installing fibre, glass shards are your biggest problem, when working on live systems the frequency of light transmitted is not visible to the human eye . Both of these factors could cause you irreparable eye damage without due care and attention.

3.15 Which of the following should you affix cables to?

- A** False ceiling grid
- B** The building structure
- C** Loose laid within the ceiling void
- D** Ceiling support wires

Correct Answer = B

BS 7671 and BS 6701 deal with the safety of affixing of cables. Cables must be permanently affixed to the fabric of the building in such a way as to prevent premature collapse in the event of a fire.

3.16 What is the maximum untwist advised when terminating jacks and patch panels for Cat 6 cable?

- A** 6mm
- B** 12mm
- C** 13mm
- D** 15mm

Correct Answer = A

Twist rates in cables are carefully calculated to ensure peak cable performance. If twist ratios are not maintained to the minimum required distance cable performance will rapidly degrade.

3.17 How much cable slack should be allowed within the cabinet?

- A** As much as is practicable
- B** 4mts
- C** 6mts
- D** 10mts

Correct Answer = C

It is good practice to leave some slack when installing cables for re-termination or movement of panels. It is a difficult balancing act, too much and you end up with a sea of excess cable which you can't manage, too little and re-termination or moves are not possible. It will be down to the installer to assess the individual situation for each installation.

3.18 What is the maximum recommended pulling tension for 24AWG cable?

- A** 100 N (22.5 lbf)
- B** 110 N (25 lbf)
- C** 120 N (26.9 lbf)
- D** 125 N (28 lbf)

Correct Answer = B

Ultimately data cables are a length of copper and plastic. When cable pulling, if excessive strain is placed on the cable they will become stretched or deformed which will stop the cable performing in the way in which it was designed leading to failed test results.

3.19 What are the benefits of hook and loop ties over plastic ties?

- A** Cheaper
- B** They come in different colours
- C** Safer for users and create less pressure points
- D** Easier to install

Correct Answer = C

Hook and loop can be easily adjusted and cause less pressure on the cables. Unlike nylon zip ties they do not need to be trimmed after installation and do not leave sharp burrs.

3.20 Over tensioning of copper data cable will cause which issue?

- A** Changes the cables electrical characteristics
- B** Changes the cables category
- C** Changes the cables weight
- D** Changes the cables colour

Correct Answer = A

Ultimately data cables are a length of copper and plastic. When pulling if excessive strain is placed on the cable they will become stretched or deformed which will stop the cable performing in the way which it was designed leading to failed test results.

4. Cable dressing requirements.

4.01 Is there an industry standard giving guidance on how much slack should be left on installed cables?

- A** Yes as per electrical industry standard
- B** There are guidelines only
- C** Yes as per data industry standard
- D** Yes as per Telecommunications standard

Correct Answer = B

Whilst there is no specific standard dictating the amount of slack to be installed, it is best practice to leave an amount of slack to allow for re-termination or minor moves.

4.02 What is the purpose of labelling cables?

- A** To identify the wire map
- B** To identify the length
- C** To identify the cost of cable
- D** To identify the individual cable

Correct Answer = D

When installing cables you may end up with thousands of identical looking cables. If you do not label them whilst pulling them in you may never be able to identify them again.

4.03 What would be most suitable to secure Cat6a cabling on a horizontal cable tray?

- A** Cable ties
- B** Hook and loop fastenings
- C** Metal cable ties
- D** Nothing

Correct Answer = B

Whilst you could use cable ties, either nylon or metal, hook and loop would be most suitable as they are easily adjustable, create less pressure on the cables and present less risk of injury to those working around them.

4.04 What is the maximum recommended distance between metal cable ties securing cable in a vertical riser?

- A** every 300mm
- B** every 1mtr
- C** every 2mtr
- D** every 3mtr

Correct Answer = C

Cables should be secured more regularly in a vertical risers than on a horizontal runs to reduce the strain and pressure placed on the cable.

4.05 If using plastic cable ties, how much tension should be applied?

- A** Tension until all cables until the cable jacket is squeezed
- B** Mild tension, enough to hold but not to deform cables
- C** Tension on all cables using pliers for extra force
- D** Tension loosely leaving cables space for movement, new installations and removal of old cables

Correct Answer = B

Overly tightened nylon cable ties will cause damage to installed cables which in turn will adversely affect the cables performance.

4.06 Where do pinch points commonly occur?

- A** Pinch points only occur in cable tray installations
- B** Pinch points only occur in cable ducting installations
- C** Pinch points only occur during termination
- D** Pinch points could occur on any part of an installation

4.07 Which of the following statements are true?

- A** All statements
- B** The labels need to match at each end of the cable
- C** The labels can be a number, letter or both
- D** Labels can give details to building/floor/comms

4.08 What should be used to write on temporary labels during installation?

- A** Permanent marker
- B** Pencil
- C** Biro
- D** The same colour

4.09 Once cable installation is complete, how should cables be permanently identified?

- A** With hand written reference in biro on the cable
- B** With hand written reference on electrical tape
- C** With durably affixed and readable labels that are resistant to environmental conditions
- D** Left to be completed by the customer

Correct Answer = D

Pinch points occur where 2 surfaces come together or have a natural gap where if something is drawn through it can be adversely affected.

Correct Answer = A

Labelling is a key part of any installation allowing you to work on an installation with ease and for subsequent testing, repairs or additions to be carried out in a structured and organised fashion.

Correct Answer = A

You must neatly annotate information on a cable which will subsequently be handled and pulled through a building. Therefore a fine point permanent marker is the most suitable type of pen for the job as you do not want the information rubbing off during installation.

Correct Answer = C

Labelling is a key part of any installation allowing you to work on an installation with ease and for subsequent testing, repairs or additions to be carried out in a structured and organised fashion.

4.10 Which of the following statements apply to cable labels?

- A** Labels should be affixed to the cable sheath
- B** Labels should contain a unique reference
- C** Labels should be affixed to termination points
- D** All statements

Correct Answer = D

Labelling is a key part of any installation allowing you to work on an installation with ease and for subsequent testing, repairs or additions to be carried out in a structured and organised fashion.

4.11 Which of the following statements define the proper requirement for the style of cable labels?

- A** Can be a duplicate of existing schemes
- B** As per manufacturers specification
- C** As specified by the customer in the contract
- D** Depends on the type of labelling machine used by the installer

Correct Answer = C

As an installer you could suggest a sensible labelling system, however it will ultimately be the choice of the customer.

4.12 What is the maximum bundle size for copper data cables?

- A** 24
- B** 50
- C** 72
- D** 100

Correct Answer = A

Where cable bundles become oversized excess heat can build up and excessive interference from other cables can be found.

4.13 Cable socking should be used for which of the following reasons?

- A** To protect from heat
- B** To protect against EMI
- C** To support the cables along their entire length
- D** To provide neat presentation

Correct Answer = D

Nylon cable socks when used correctly can make an installation look neater and more manageable. If installed badly they make moves, adds and changes far more difficult and can cause additional heat in large bundle sizes.

4.14 When installing cable socking in cabinets which of the following should be considered?

- A** Patch panels can be relocated
- B** Cable ID's can be seen
- C** Cables from different panels are sleeved separately
- D** All statements

Correct Answer = D

Nylon cable socks when used correctly can make an installation look neater and more manageable. If installed badly they make moves, adds and changes far more difficult and can cause additional heat in large bundle sizes.

5. Fire regulation requirements.

5.01 An IT cable's reaction to fire is classified under which set of statutory regulations?

- A** The Regulatory reform (Fire Safety) Order 2005
- B** The Construction Products Regulations 2013
- C** The Electricity at Work Regulations 1989
- D** The Building Regulations 2010

5.02 What does the term CPR mean in the context of the fire performance of an IT cable?

- A** Cable Products Regulations
- B** Construction Products Regulations
- C** Cable Products Rules
- D** Construction Products Rules

5.03 In a new data cable installation the cables installed within a building must meet which CPR Euro classification?

- A** Dca -s1b,d2,a2
- B** Fca
- C** Aca
- D** Cca -s1b,d2,a2

5.04 Where MUST the manufacturer display the CPR Euro classification on data cable?

- A** On the CE marked label on the cable reel
- B** On the manufacturers website
- C** On the manufacturers data sheet
- D** On the cable

5.05 Which of the following is NOT a satisfactory method to reduce separation between unscreened metallic IT cables and power cables passing through a structure where a fire barrier is installed?

- A** The cables are enclosed in separate metal conduit where they pass through the structure
- B** The cables are enclosed in separate metal trunking where they pass through the structure
- C** The cables are enclosed in a plastic conduit where they pass through the structure
- D** The cables are enclosed in separate metal ducts where they pass through the structure

Correct Answer = B

CPR test cables for their properties in relation to spread of flames, heat, smoke, droplets and acidity and award them a rating according to the results. This rating informs you where you can install these cables.

Correct Answer = B

The Construction Products Regulations aim to provide a common technical language to assess the performance of various construction products including data cabling.

Correct Answer = D

CPR test cables for their properties in relation to spread of flames, heat, smoke, droplets and acidity and award them a rating according to the results. This rating informs you where you can install these cables.

Correct Answer = A

A cable manufacturer probably will display the information on their website and the cable data sheet and often will also display it on the cable itself. However they MUST clearly label the packaging (usually a drum, spool or box).

Correct Answer = C

Correctly installed metallic containment systems are effective screens for data cables. Plastic containment systems do not work as a cable screen.

5.06 When installing additional data cable and passing through a fire rated wall, when should a removed fire sealing arrangement be re-instated?

- A** At the end of the working day
- B** When the system has been fully commissioned
- C** As soon as practicable
- D** On completion of the work

5.07 What considerations should be given to fire separating structures when preparing a cable route in a new building?

- A** Openings should be as few as possible
- B** Openings should be as small as possible
- C** Openings should be fire stopped
- D** All statements

5.08 Which of the following building materials is not suitable for sealing openings in a fire separating wall?

- A** Multi-purpose filler
- B** Cement mortar
- C** Mineral fibre
- D** Gypsum based plaster

5.09 Intumescent fire stopping materials are designed to:

- A** Shrink when subject to heat
- B** Expand when subject to heat
- C** Expand when subject to gas and smoke
- D** Prevent transmission of sound

5.10 If you discover a hole in a fire rated wall that has not been fire stopped, what should you do?

- A** Report it
- B** Ignore it
- C** Find some fire stop material and fill the gap
- D** Use decorators sealant to fill the gap

Correct Answer = C

Whenever a fire barrier is penetrated the risk for fire to spread is increased to an unacceptable level. Therefore the fire barrier should be replaced as soon as possible.

Correct Answer = D

When installing data cabling it is inevitable that penetrations through fire barriers will happen. It is the data cabling industries responsibility that the increased risk of fire spread be kept to a minimum during installation and where possible the risk is reduced back to that of the original building structure once the installation is completed.

Correct Answer = A

There are numerous materials available to use when sealing penetrations. Not all are suitable to be used when filling fire rated barriers such as Multi-purpose fillers. When in any doubt it is always best to seek advice.

Correct Answer = B

Fire stopping materials can be either Intumescent, Endothermic or Ablative.

Correct Answer = A

Fire stopping should be installed and checked by a qualified and certified individual.

5.11 You are preparing to install IT cables into an existing pathway that has been appropriately sealed with fire stop materials. How should you proceed?

- A** Remove and dispose of existing firestop materials
- B** Prepare existing penetrations by removing firestop materials and store them in a safe place for re-installation
- C** Avoid the existing route and create new
- D** Cables should be routed to avoid fire separating structures

5.12 A trunking passing through a fire rated wall does not require internal fire seals if the maximum internal cross-sectional area of the trunking is not greater than:

- A** 710mm² (32mm diameter conduit or 25 x25 trunking permitted)
- B** 1070 mm²
- C** 1710 mm²
- D** 7100 mm²

5.13 Which of the following cable support products should be used to prevent premature collapse in the event of a fire?

- A** Wall mounted plastic trunking
- B** Plastic cable tray suspended from the ceiling
- C** Non-metallic cable ties
- D** Steel cable ties

5.14 Temporary sealing of fire rated structures may be necessary in which of the following situations:

- A** On completion of the cabling system
- B** On completion and handover of the building
- C** During the commissioning of services
- D** During the installation process

Correct Answer = B

Some firestopping systems are designed to be installed, removed, reinstalled and reused. Others are designed to be removed and then a new system installed. It is up to you to learn the difference.

Correct Answer = A

It has been calculated that a limited number of small holes do not create a sufficiently raised risk profile to justify the extra effort in sealing these holes in some circumstances. BS7671 tells us that so long as the surface area is smaller than 710mm² then you do not require fire seals.

Correct Answer = D

In the event of a fire non metallic elements will melt leading to the premature collapse of cabling. Steel cable ties will not melt, however they must be secured to the fabric of the building, if they are simply placed in plastic trunking the cables will still collapse once the trunking gives way.

Correct Answer = D

During the installation process you may need to gain access to an area multiple times therefore a temporary seal is permissible. Once the installation is complete you must permanently seal all openings.

6. Safe installation practices – cables.

- 6.01** When installing cable from a drum what is the minimum number of people required carry out the task?
- A** 1
 - B** 2
 - C** 3
 - D** 4
- 6.02** What is the correct action to take when friction damage is noticed when pulling cable from a box?
- A** Stop, cut the cable after the damage and carry on
 - B** Make a note of which cable it is so you can check the test results later
 - C** Stop, work your way back down the pathway to identify where the damage is being caused and repair it. The damaged cable must be replaced
 - D** Carry on it is only friction on the sheath
- 6.03** If a cable drum has been significantly damaged so that cable can be clearly seen inside the drum, which action should be taken?
- A** Use the drum, but stand clear whilst it is spinning
 - B** Use the cable, but remove from drum manually without spinning
 - C** Do not use and report to supervisor
 - D** Repair the drum and use as normal
- 6.04** If a cable drum is heavily splintered around the edge, which action should be taken?
- A** Use it as it is, but stand at a safe distance while the drum is spinning
 - B** Do not use it
 - C** Return to stock and use another drum
 - D** If damage does not extend to the cable, wear gloves and use an appropriate tool to remove the splinters before using drum as normal

Correct Answer = B

When pulling cable from a drum, 1 person must remain with the drum to control the speed at all times. At least 1 other person will be required to pull the cable out, depending on the routing and obstacles more may be required.

Correct Answer = C

If friction damage is found on the cable during installation the most common cause is rough surfaces inside the containment or pathway. This should be corrected before further cable installations are attempted.

Correct Answer = C

If a cable drum is heavily damaged you cannot be certain of the quality of the cable therefore it should not be used.

Correct Answer = D

Splintering around the edge of a cable drum is common. Extra care must be taken when using these drums as there is an increased chance of personal injury. Where possible remove loose splinters before using.

- 6.05** Which of the following is the correct method for pulling cable off a wooden drum:
- A** Suspend the cable drum on a tied-off rope
 - B** Suspend the cable drum on a metal A frame and spindle
 - C** Suspend the cable drum between two chairs and a broom handle
 - D** Suspend the cable drum between two chairs and length of steel conduit

Correct Answer = B

Always use the correct tools and equipment for the job. Improvising or using the wrong equipment puts yourself, your co-workers and the quality of the installation in unnecessary danger.

- 6.06** What is the maximum number of Cat6A cable drums that should an individual carry at any one time?
- A** None, this should always be a 2-person lift
 - B** There are no specified limits, it depends on the strength of the individual
 - C** This will be determined in the risk assessment
 - D** No more than 3, to ensure the drums do not block vision when carried

Correct Answer = C

As a manual handling task this should be risk assessed. The decision will be made based on the conditions and individuals involved in the task.

- 6.07** What should be done if a stack of cable boxes collapses?
- A** Finish the current cable run and then restack the boxes safely
 - B** Stop the job and report to supervisor
 - C** Replace boxes once fallen boxes are empty
 - D** Stop work immediately and restack the boxes safely

Correct Answer = D

Once boxes have fallen it is easy for the cable to become tangled. This could cause damage to the cable being installed or injury to someone pulling the cables.

- 6.08** What is the minimum number of people required to safely pull in cable from boxes?
- A** 1
 - B** 2
 - C** 3
 - D** 4

Correct Answer = B

You will require one person controlling the pull from boxes. It would be best practice to have an individual either side of any obstruction (wall).

- 6.09** When loose laying cable in a corridor with a 90 degree corner, what is best practise?
- A** Place someone on the corner to feed the cable
 - B** Pull the entire length around in one go
 - C** Place a drum at the corner to act as strain relief
 - D** Place the box on the corner, pull the cable in one direction then fleet back the rest

Correct Answer = A

It is always best practice to make sure someone on your team has visibility of areas where cable is moving. It is also best practice to minimise strain on a cable whilst being pulled and if no-one is placed on a corner the cable will be put under pressure and will rub on a corner.

- 6.10** When is it appropriate to use a knife whilst undertaking installation tasks?
- A** When removing sheath from a cable
 - B** A retractable knife can be used at any time instead of an appropriate tool
 - C** When required in the absence of a screwdriver
 - D** The use of knives should be avoided

Correct Answer = D

Specialist tools have been designed and produced for every aspect of data cabling installation, termination and testing. Always use the right tool for the job.

- 6.11** A cable needs to be pulled between two offices, through a straight run above a false ceiling. Cable basket has been installed, what is the minimum number of people required to pull in correctly?

Correct Answer = C

You will require one person controlling the pull from boxes. It would be best practice to have an individual either side of any obstruction (wall).

- A** 1
- B** 2
- C** 3
- D** 4

- 6.12** What can be used to aid pulling in a cable bundle through an enclosed pathway?
- A** Trunking lid
 - B** Stretched out wire coat hanger
 - C** Nylon cable rod
 - D** Broom handle

Correct Answer = C

Where a tool has been designed and manufactured to carry out a task, use that tool and do not improvise with what you have to hand.

- 6.13** What is the correct tool to remove yellow fibrous cable jacket from fibre optic cable?
- A** Utility knife
 - B** Kevlar scissors
 - C** Hacksaw
 - D** Bolt cutters

Correct Answer = B

Where a tool has been designed and manufactured to carry out a task, use that tool.

6.14 When changing the blade on a Hacksaw which direction should the teeth point?

- A** It doesn't matter
- B** Forwards
- C** Backwards
- D** Depends on the type of hacksaw

Correct Answer = B

Hacksaw blades are designed to cut on the forward stroke. Blades commonly have an arrow printed on them to show which way they should be fitted, but this is not always the case.

6.15 How many Cat6a cables should be installed into 20mm conduit?

- A** 2
- B** 6
- C** 12
- D** 24

Correct Answer = A

There are a number of online calculators available which consider cable diameter, bend radius and fill capacity when compared to standards. These ensure the correct number of cables installed in a containment system does not exceed the point where performance is affected.

6.16 What is the most suitable containment to run on the wall at desk height in an office to carry 12 Cat 6 cables?

- A** 18mm Conduit
- B** 300mm Steel Tray
- C** 100mmx54mm Wire Basket
- D** 50mmx50mm Trunking

Correct Answer = D

Steel trays and wire baskets are not aesthetically suitable to install in an office environment at desk height and an 18mm Conduit could not contain 12 cables.

6.17 What is the most appropriate tool to cut excess Cat 6 cable?

- A** Hacksaw
- B** Jigsaw
- C** Scissors
- D** Side cutters

Correct Answer = D

Side cutters are designed to cut small core size cables so are the most appropriate.

6.18 What is the most appropriate pen to use to temporarily label a cable when pulling in?

- A** Felt tip
- B** Fine point permanent marker
- C** Ball point
- D** Chalk pen

Correct Answer = B

You must neatly annotate information on a cable which will subsequently be handled and pulled through a building. Therefore a fine point permanent marker is the most suitable type of pen for the job.

6.19 Which type of fastening is most appropriate to temporarily dress cables?

- A** Hook and loop
- B** 150mm x 7.6mm Nylon
- C** Wire ties
- D** 300mm x 13mm Nylon

Correct Answer = A

When temporarily dressing cables you will be required to regularly change and adjust bundles. Therefore hook and loop are the most suitable for the task.

6.20 Which is the correct tool to strip the outer sheath of copper data cable?

- A** Cyclops/Rotary stripper
- B** Stanley knife with fully retractable blade
- C** Scissors
- D** Sharp pen knife

Correct Answer = A

Where a tool has been designed and manufactured to carry out a task, use that tool.

7. Safe installation practices – personal safety.

7.01 What type of gloves should be worn when pulling in data cable?

- A** Leather gloves
- B** Blue latex gloves
- C** Correctly fitting EN420 compliant gloves
- D** Cotton gloves with palm grips

Correct Answer = C

When using any safety equipment ensure that it complies with relevant safety standards.

7.02 PPE is used to protect whom?

- A** The person wearing it and the people in the immediate vicinity
- B** All people in the vicinity of the installation activities
- C** The local health & safety representative
- D** The person wearing it

Correct Answer = D

PPE is PERSONAL Protective Equipment and is designed to protect the user.

7.03 When working at height on ladders, the safe angle determined by the base to height ratio should be?

- A** 1:2
- B** 1:4
- C** 1:8
- D** 4:1

Correct Answer = B

The correct B:H ratio for ladders is calculated to minimise the risk of the ladder slipping or falling.

7.04 When working at height on step-ladders and using 2 hands to carry out a task, which of the safety guidance applies?

- A** Ensure that both feet are on the same step
- B** Maintain 3 points of contact by using two feet and one hand
- C** Maintain 3 points of contact by using two feet and a part of the body
- D** Wear a safety harness attached to the step-ladder

Correct Answer = C

On steps 3 points of contact must be maintained. If working on a task and it is safe to do so you can use both hands on the task when you can still maintain 3 other points of contact.

7.05 What should be done if a suspected asbestos containing material is identified or suspected?

- A** For low grade asbestos, complete the work activity and sweep up any particles afterwards
- B** Continue working and use 'wet drilling' methods where penetrations are required
- C** Stop work, put up a warning sign and prevent anyone else from entering the area
- D** Stop work and look for an alternative pathway

Correct Answer = C

It is possible to discover asbestos at any point in buildings constructed prior to the year 2000. If in doubt stop work immediately and seek advice.

7.06 To be suitable, PPE must:

- A** Reduce risk and be comfortable on the wearer
- B** Reduce risk and be highly visible
- C** Serviceable, suitable and fit correctly
- D** Be assessed as appropriate to the risk involved and suitable for the working conditions

7.07 Which of the following are PPE requirements for pulling in cable on an active construction site?

- A** Hard Hat and Facemask
- B** Gloves and Glasses
- C** Safety Boots and Hi Viz Jacket
- D** All items

7.08 What type of safety helmet must you wear when installing cabling at height?

- A** BS EN 397 Compliant helmet
- B** Company branded helmet
- C** Black helmet
- D** Yellow helmet

7.09 Whose responsibility is it to provide PPE to an employee?

- A** The employee
- B** The site storeman
- C** The employer
- D** The site Health and Safety advisor

7.10 How often should you inspect any ladders or steps you are working on?

- A** Monthly
- B** Weekly
- C** Daily before use
- D** Daily after use

7.11 You are pulling in cable into an overhead basket in a large commercial warehouse at 4.8m above floor level. What would be the best system to use?

- A** Telescopic Ladders
- B** Mobile steps
- C** Extendable Ladders
- D** Mobile Elevated Working Platform (MEWP)

Correct Answer = D

The onsite risk assessment will identify specific considerations for PPE requirements.

Correct Answer = D

PPE is there for your safety. The minimum requirement on a working site is a hard hat, facemask, gloves, goggles, safety boots and Hi-Viz, some sites may require more.

Correct Answer = A

When using any safety equipment ensure that it complies with relevant safety standards.

Correct Answer = C

Specific requirements for Employers and Employees are laid down in the Health and Safety at Work Act and MUST be followed.

Correct Answer = C

Local policies may state different timeframes for inspection of ladders and the reporting systems required. However, the ladder user should carry out a daily before use inspection of ladders and working platforms before climbing them.

Correct Answer = D

Where space allows more stable and secure platforms should be used when working at height.

7.12 What should be done if the stitching on a safety harness starts to fray?

- A** Report it, use it, leave to one side at the end of the
- B** Report it, quarantine it, get another set
- C** Use it, report it at the end of the day
- D** Use it, but take extra care

Correct Answer = B

If safety equipment which is damaged or worn it must be replaced and removed from use.

7.13 What is the correct action when working at ground level near a large, open pit?

- A** Carry on working as normal
- B** Stop work until the pit is closed
- C** Wear suitable equipment for working at height
- D** Work with extra caution

Correct Answer = C

The HSE definition of working at height includes working anywhere where a fall is possible that could cause injury. Therefore whilst working next to an open pit you are technically working at height and depending on the size of the chamber the correct safety equipment must be selected.

7.14 Which of the following is NOT advised when lifting or carrying equipment?

- A** Carrying items which block your view, without assistance
- B** Bend your knees, not your back
- C** Avoid twisting or leaning sideways
- D** Keep the load close to your waist whilst moving

Correct Answer = A

The risk assessment should cover manual handling practices and procedures. Safety for yourself and others should always be the primary concern when manual handling.

7.15 Which of the following should NOT be done whilst pulling in cables?

- A** Push cables through holes without checking the exit point first
- B** Pull multiple cables at once
- C** Work in teams or pairs
- D** Maintain a clear view of the area being worked on

Correct Answer = A

Always survey and check your cable route before beginning pulling in cable. This will confirm that the route is suitable and safe.

7.16 How should a large communications cabinet be moved?

- A** "Walk" it from side to side
- B** Drag it
- C** Carry between 2 people
- D** Follow the Assess, Plan, Prepare, Move procedure

Correct Answer = D

The risk assessment should cover manual handling practices and procedures. Safety for yourself and others should always be the primary concern when manual handling.

7.17 Which is the appropriate way to move a large cable drum?

- A** Wheel it alone
- B** Drop it on its side and use a set of trolley jacks
- C** Get a team together, wheel it while one person acts as a banksman
- D** Drag it using a 4x4

Correct Answer = C

The risk assessment should cover manual handling practices and procedures. Safety for yourself and others should always be the primary concern when manual handling.

7.18 You arrive on site and find there is nothing restricting public access to your work area. You should:

- A** Work quickly to minimise the risk
- B** Use signage and barriers to section off the area, once the area is secure seek guidance to ensure the correct signage has been used
- C** Tie rope across to stop access
- D** Make extra noise so people will know you are there

Correct Answer = B

As a first action you must make the area as safe as possible to stop members of the public from being injured. Some action is better than no action. Once you are happy the area is safe you can seek guidance to ensure you have used the correct signage and resolve any issues you discover.

7.19 When starting work in a shared corridor in an office environment, state the correct action if the appropriate signage is not available:

- A** Place available signage in the middle of the work area to give the best chance of being seen
- B** Be extra vigilant whilst working and verbally warn anyone walking into the area
- C** Source required signage to properly cordon off the area
- D** Block off access points with tools or materials

Correct Answer = C

Safety for yourself and others should be your primary concern.

7.20 What is the purpose of displaying warning and guarding signs?

- A** To protect the public
- B** To protect yourself
- C** To protect yourself, your fellow workers and those who could be affected by your actions
- D** To protect workers from legal action in case of an accident

Correct Answer = C

Safety for yourself and others should be your primary concern.

8. Other services.

8.01 The minimum separation distance recommended between power cables and metal IT cables where the specification and or intended application of the IT cables is not known is:

- A** 50mm
- B** 150mm
- C** 200mm
- D** 500mm

8.02 What is the maximum distance data cables and screened power cables can be run without separation?

- A** 35m
- B** 40m
- C** 45m
- D** 50m

8.03 What is the minimum recommended separation distance between screened backbone cabling and unscreened power cables, where no divider is provided?

- A** 0mm
- B** 30mm
- C** 50mm
- D** 200mm

8.04 Where it is necessary network infrastructure cabling should only cross over power cables:

- A** where separated by a metal divider
- B** where screened cables are used
- C** where separated by an insulated divider
- D** At right angles

Correct Answer = C

Data cable performance is impeded by EMI when run in proximity to power cables. The 2 main factors are the power flowing through the power cable and the physical distance between the 2 cables. Standards have carried out these calculations for you and minimum recommended separation distances can be found therein.

Correct Answer = A

Data cable performance is impeded by EMI when run in proximity to power cables. The 2 main factors are the power flowing through the power cable and the physical distance between the 2 cables. Standards have carried out these calculations for you and minimum recommended separation distances can be found therein.

Correct Answer = C

Data cable performance is impeded by EMI when run in proximity to power cables. The 2 main factors are the power flowing through the power cable and the physical distance between the 2 cables. Standards have carried out these calculations for you and minimum recommended separation distances can be found therein.

Correct Answer = D

Electro Magnetic Interference is strongest when electron flow is in the same direction. As the angle of electron flow increases the relative interference decreases up to 90 degrees (right angles) where EMI is reduced to almost Nil.

8.05 Where necessary metallic IT cables are located close to fluorescent luminaires the metallic IT cables it is recommended that they should be separated by a distance of at least:

- A** 30mm
- B** 50mm
- C** 100mm
- D** 130mm

8.06 An adequate separation between telecommunication wiring and power cabling is necessary to:

- A** Allow for future expansion of the telecoms system
- B** Prevent danger to persons from induced voltages
- C** Provide adequate working space for maintenance personnel
- D** So that power and telecoms cable can be clearly identified

8.07 The standards make a recommendation for 50mm separation when power and telecommunications cabling are run in parallel to protect against EMI. What 2 factors are involved with this:

- A** Power flowing through the power cable and the physical distance from the containment
- B** The overall length of the power cabling and the telecommunications cabling
- C** Power flowing through the telecommunications cable and the physical distance from the power
- D** Power flowing through the power cable and the physical distance from the telecommunications cabling

8.08 Which of the following will NOT prevent electrical interference from reducing the performance of copper data cables?

- A** Installation of screened twisted pair cables
- B** Installing cables in mechanically and electrically continuous conduit
- C** Installation of unscreened twisted pair cables
- D** Physical separation of cables

Correct Answer = D

Fluorescent lights are a particular problem to data cables. Not only do they create EMI because of the power they use they also create power "flickers" which directly impact on the modulated signals being carried interfering with the Ethernet data frames.

Correct Answer = B

Where cables are run too close to each other not only signals but also voltages can be induced which can cause damage or injury.

Correct Answer = D

Data cable performance is impeded by EMI when run in proximity to power cables. The 2 main factors are the power flowing through the power cable and the physical distance between the 2 cables. Standards have carried out these calculations for you and minimum recommended separation distances can be found therein.

Correct Answer = C

Screened cable is specially designed for the screening to "absorb" the EMI which is dissipated by a correct link to the earthing system. This reduced the EMI on the cable conductors allowing them to function correctly.

8.09 Where a telecommunication cable is to be buried in the ground, which HSE guidance document can help comply with legal obligations?

- A** HSR25
- B** GS38
- C** HSG47
- D** HSG85

8.10 Which one of the following legal requirements would not apply to the installation of a telecommunication cable service being buried in the ground near other underground services?

- A** Construction (Design and Management) Regulations 2007
- B** The Pipelines Safety Regulations 1996
- C** The Management of Health & Safety at Work Regulations 1999
- D** Work at Height Regulations 2005

8.11 When installing a telecommunication cable that is to be laid into ducts you will be required to work in cable chambers, When preparing to enter cable chambers immediate action should be taken?

- A** Put up a workman's tent to shelter from inclement weather
- B** Remove chamber lids and carry out the installation
- C** Testing for explosive and noxious gases should be carried out with a portable gas detector
- D** Wear waterproof clothing

8.12 Where ductwork is to be buried in the ground for telecommunication cables which colour of duct would not be suitable?

- A** Yellow
- B** White
- C** Black
- D** Grey

Correct Answer = C

Depending on the area in which you are working you may find different standards and legislation apply. You must check what specific legislative requirements affect you in the environment in which you are working.

Correct Answer = D

When working next to an open UG structure (pit) working at height regulations do apply. Where an open trench is being used they do not, unless should someone fall in they are likely to suffer additional injury due to the confined nature of the space.

Correct Answer = C

Underground structures are susceptible to the build up of gases. These gases may be explosive, poisonous and odourless so gas testing needs to be carried out.

Correct Answer = A

The National Joint Utilities Group has provided guidance for the colours to be used for all underground utilities and recommended depth for them to be installed.

8.13 What is the minimum recommended depth for installing a telecommunication cable where it is to be buried below a footpath?

- A** 250mm-450mm
- B** 450-600mm
- C** 500mm
- D** 600mm

Correct Answer = C

BSEN 50174-3, Table 3 states minimum recommended bore depths for installed telecommunications systems.

8.14 Which one of the following cable management systems can provide protection to data cabling from electromagnetic interference?

- A** metallic trunking
- B** plastic conduit
- C** plastic trunking
- D** non-metallic trunking

Correct Answer = A

A correctly installed metallic cabling management system will be earthed throughout. This acts as a screen by absorbing the EMI and feeding it to earth drastically reducing the strength of the EM fields causing interference reaching the cable.

8.15 What is the minimum recommended depth for installing a telecommunication cable where it is to be buried below a road or carriageway?

- A** 250-350mm
- B** 750-1200mm
- C** 600mm
- D** 750mm

Correct Answer = C

BSEN 50174-3, Table 3 states minimum recommended bore depths for installed telecommunications systems.

9. Waste Management.

9.01 Should a construction site have a waste management policy?

- A** Yes but it is advisory only
- B** Yes and it must be followed
- C** No but it is good practice
- D** No it is the responsibility of the individual

Correct Answer = B

The Construction Resources and Waste roadmap Annex 4 as part of the DEFRA Waste Strategy for England 2007 states Site waste management plans are mandatory for all construction sites.

9.02 Where should empty cable boxes be disposed of?

- A** Leave for cleaner
- B** The recycling skip
- C** As directed in your company's waste management policy
- D** The general skip

Correct Answer = C

Common sense suggests you should put your cardboard box in the recycling skip, however some sites have different processes for different types of recycling and sometimes different contracts for different contractors. Therefore the only way to be sure would be to check your own waste management policy.

9.03 Where should waste cable left on cable drums be disposed of?

- A** Keep for scrap value
- B** As directed in your company's waste management policy
- C** The general skip
- D** The recycling skip

Correct Answer = B

Common sense suggests you should put your cable in the recycling skip or metal skip if there is one, however some sites have different processes for different types of recycling and sometimes different contracts for different contractors. Therefore the only way to be sure would be to check your own waste management policy.

9.04 How should a fibre sharps bin be emptied?

- A** Send away for disposal
- B** Empty into general skip
- C** Empty into recycling skip
- D** Seal them in a bag and put them in a normal bin

Correct Answer = A

Disposal of glass shards is a specialist area. They must be disposed of correctly by a specialist company.

9.05 How should empty wooden drums be disposed of?

- A** As directed in your company's waste management policy
- B** Break them down before putting in recycling skip
- C** Put in general site skip
- D** Sell them

Correct Answer = A

There are many websites available giving suggestions on how to upcycle cable drums, however drums should not be sold off as this does nothing for your companies sustainability goals. Most companies waste management policies will tell you that drums should be returned to manufactures for reuse as this is the most environmentally friendly way to deal with this waste.



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