

## **ECS Electrical Safety Unit Assessment Guide**

The ECS Electrical Safety Unit assessment has been developed to provide a basic electrical industry safety qualification to support the application of an ECS Related Discipline or other defined ECS cards.

The assessment covers the essential safety aspects of carrying out electrotechnical work in a specialised occupation allied to an electrical installation that has already been installed by an ECS gold card holder (typically an Installation Electrician holding a Registered Electrician status). The criteria of the assessment is based around the Electricity at Work Regulations for safe working of electrotechnical allied trades when carrying out associated installation works. The emphasis of the assessment is on when the ECS related discipline cardholder needs to make sure that electrical installation work is handed over and carried out by suitably qualified ECS Installation Electrician cardholder.

To apply for an ECS related discipline card the applicant must hold a valid ECS Health, Safety and Environmental (HS&E) assessment plus the ECS Electrical Safety Unit. The ECS HS&E assessment must be taken separately from the ECS Electrical Safety Unit assessment. Full details of the ECS HS&E assessment can be found by visiting [www.ecscard.org.uk/HS](http://www.ecscard.org.uk/HS)

Delegates for the ECS Electrical Safety Unit assessment are assumed to have a basic level of knowledge and competency in electrical theory and principles. It is strongly advised that all delegates undertake suitable training prior to taking the ECS Electrical Safety Unit assessment.

The ECS Electrical Safety Unit assessment is not suitable, on its own, for people entering the Electrotechnical sector or who are looking to train as an electrician and is not recognised as an electrical theory qualification.

For full details of all ECS cards and their requirements please see [www.ecscard.org.uk/card-types](http://www.ecscard.org.uk/card-types)

### **Assessment Availability**

The ECS Electrical Safety Unit assessment is available from the JIB, and JIB Registered and Preferred Training Providers. Typically training providers who offer training for the ECS Electrical Safety Unit will also be able to provide the assessment.

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 electrical safety.

The assessment is to be completed in 30 minutes.

Each question will require the correct answer to be selected from a choice of four possible answers given.

The pass mark is 21 (70%) correctly answered questions.

The topics and assessment criteria are set out below with sample questions for reference. Delegates are strongly encouraged to study these and undertake suitable training before taking the assessment.

**For full details of the Electrotechnical Certification Scheme (ECS) and the qualification requirements to ECS card applications please visit [www.ecscard.org.uk](http://www.ecscard.org.uk)**

### Criteria for ECS Electrical Safety Unit Assessment

Assessment area	Number of questions	Criteria for assessment - general
<b>1. Basic electrical theory and the dangers of electricity</b>	4	1.1 State the effects on the body from electrical contact.
		1.2 State the emergency procedures and immediate first aid in the event of electric shock.
		1.3. State the basic elements of electrical circuits in terms of current, voltage and resistance.
		1.4. Identify electrical hazard warning signs and the differing risks of various voltage levels.
		1.5. Identify sources of information and guidance in respect to electrical safety.
<b>2. Key electrical regulations and legislation.</b>	2	2.1. State the relevant regulations and legislation to working with electrical equipment: <ul style="list-style-type: none"> <li>• BS7671 Wiring Regulations (as amended) including guidance notes.</li> <li>• The Electricity at Work Regulations.</li> </ul>
<b>3. Safe working practices on electrical installations.</b>	3	3.1. State the importance of Isolation of electrical equipment.
		3.2. Identify the basic test equipment tools for safe isolation and testing and electrical installations.
		3.3. State the procedures for safe Isolation of electrical equipment.
		3.4. State the procedures for inspection and testing of electrical equipment post installation and maintenance work.
<b>4. Identify cabling and wiring practices</b>	5	4.1. State cable types and insulation colour codes for low and extra low voltage cables.
		4.2. State the source and voltages of single and three phase supplies.
<b>5. Limits and boundaries when working on electrical installations.</b>	2	5.1. Identify competency levels, roles and responsibilities and extent of work to be carried out on electrical installation for a delated electrotechnical discipline.
		5.2. List the voltage range of low and extra low voltage supply systems.
<b>6. Basic electrical equipment types.</b>	4	6.1. Identify supply and distribution equipment.
		6.2. Identify basic common types of electrical accessories.
		6.3. Identify common electrical equipment and their configurations (such as transformers, inverters, batteries).

<b>7. Risk assessments, method statements, safe systems of work and permits to work.</b>	<b>4</b>	7.1. Identify required documentation, procedures and safeguards, legal requirements.
		7.2. Identify roles and responsibilities. Duties for the person working on the electrotechnical installation and sources of guidance.
<b>8. Basic requirements of Testing Electrical Installations.</b>	<b>6</b>	8.1. State the procedures for safe of Isolation of electrical equipment.
		8.2. Identify visually inspection requirements before energising installed or maintained electrical equipment.
		8.3. State the testing procedure to be undertaken before energising installed or maintained electrical equipment.

## **ECS Electrical Safety Unit Assessment**

### **Example questions to assist with the Assessment of Underpinning Knowledge**

The example questions in this section are intended to help delegates prepare for the ECS Electrical Safety Unit underpinning knowledge assessment.

To answer these questions you may need to do some research. They are intended to help you gain the level of knowledge you will need for the assessment test.

It is recommended that you use these questions to prepare for the assessment alongside a supported training programme from a training provider, either classroom based or online, before you take the assessment.

The answers are not provided, and delegates should carry out their own research and discuss their suggested answers with their training provider, colleagues and/or employers as required.

1. What is the relationship between Voltage (V), Current (C) and Resistance (R)?
  - a.  $V = I + R$
  - b.  $V = I \times R$
  - c.  $V = I - R$
  - d.  $V = I / R$
  
2. What is the danger associated with electrical installations powered through duplicate sources of supply such as PV, Wind or a UPS?
  - a. The possibilities of a high voltage being present
  - b. The duplicate source of supply may continue to supply mains if the supply power is isolated
  - c. The duplicate source of supply is not earthed when turned off
  - d. The duplicate source of supply output has exposed terminals
  
3. Which document specifically details the safety requirements for electrical working?
  - a. Electricity at Work Regulations 1989
  - b. The Health and Safety at Work Act 1974
  - c. The IET Wiring Regulations (BS7671)
  - d. BS-EN 50173 Cabling Standards
  
4. The normal procedure for working on electrical equipment should be which one of the following?
  - a. Dead working
  - b. Wearing insulated gloves
  - c. Using insulated tools
  - d. Live working

5. If a fuse blows again after being replaced the correct procedure is
  - a. Call the electricity supply company to upgrade the supply
  - b. Replace the fuse with increasingly larger ratings until it doesn't blow again
  - c. Isolate the supply and replace the circuit cable
  - d. Isolate the circuit or device, then trace and rectify the fault
  
6. Extraneous-conductive-parts require protective equipotential bonding to ensure that?
  - a. The exposed parts are isolated from earth
  - b. No dangerous potential difference can occur
  - c. Utility pipes can be used as earth electrodes
  - d. No connection with a cpc is required
  
7. The nominal single-phase voltage (phase-neutral) in the UK is?
  - a. 230 volts
  - b. 240 volts
  - c. 400 volts
  - d. 415 volts
  
8. A safe system of work is a defined method of doing work in a safe way such that:
  - a. hazards are minimised, so they can be ignored.
  - b. hazards are accepted as part of the risk of doing the job
  - c. hazards are eliminated, or risks minimised
  - d. hazards are not eliminated but minimised
  
9. Which of the following is NOT required as part of a visual inspection of equipment prior to connecting and energising?
  - a. Check operation of equipment
  - b. Check condition of plug
  - c. Check condition of equipment cable
  - d. Check correct type and rating of fuse is fitted
  
10. Which of the following does NOT form part of a risk assessment to determine the frequency of in-service inspection and testing of electrical equipment?
  - a. Equipment Type
  - b. Environment in which the equipment is stored and used
  - c. The type of plug on the supply cable
  - d. Previous Maintenance Records

### **Additional Practice / Study Help**

For these additional questions you may need to do some further research as they do not contain suggested answers. They are intended to help you gain the level of knowledge you will need for the ECS Electrical Safety Unit underpinning knowledge assessment.

Please note the actual assessment is completely multiple choice. You will not be presented with the short answer style of question you find below in this section.

1. What is the most serious effect that electric shock can have if you come into contact with a live part?
2. To prove a circuit or equipment is dead after isolation what is the FIRST activity in the sequence of events that must be carried out?
3. The normal procedure when you are working on electrical equipment is to?
4. The correct three-phase insulation colours according to BS7671 for L1, L2, L3, N (respectively) are?
5. A residual current device is designed to operate in the event of what type of fault?
6. Who has the legal responsibility to ensure that risk assessments are carried out?
7. What is a switched fused connection unit (spur) used for?
8. What is the purpose of the inspection conducted prior to use of equipment is to verify?
9. What is the purpose of the inspection conducted prior to testing an installation?
10. In which order must the following tests on Class I equipment be carried out?
  - 1: Earth continuity
  - 2: Visual Inspection
  - 3: Operation
  - 4: Insulation Resistance