



The Institution of
Engineering and Technology

Engineering Technician Electrician EngTech (Elec)

Assessment Questions



How to approach and formulate the three questions with examples on how to draw out the competencies they relate to.

Assessment Question 1

Do you remember having to identify a fault for the first time on a ring main during your training? Perhaps you might have encountered an issue, such as taking the ring main and splitting it in half, testing, then in half again, testing and so on, until you found the cable or core which was causing you problems. It is this type of work, by way of an example, to consider when answering the Electrician EngTech application assessment questions, as the methods used are 'sometimes' more important than the resolution.

The best advice for completing this section of the application form and answering the question in a practical, easy to follow way, is to think back to your early days when showing your work was more important than the outcome. Structure the answer, beginning middle and end. You could use the STAR method for this:

- **Situation:** tell the story – where were you, who were you with, what was the problem?
Set the scene for the assessor.
- **Task:** what was I tasked with – what were my responsibilities – was I capable of doing everything asked of me – if not, who did I ask for help?
- **Action:** How did I fix it – what was my method – why did I decide on that method - what tools did I use – what PPE was needed?
- **Result:** What was the outcome – how was this left – was the customer/supervisor happy – what did you learn?

You will find that the 500-word count has disappeared, and you are left with a story from your experience.

So how does this relate to A1 and A2 competences? Let's take Assessment Question 1 and consider what happens when we compare A1 and A2 competences to them, check if we can identify the similarities and what the question 1 is trying to draw out.

Assessment Question 1 vs. Competences A1 and A2

Question 1 - Give an example of a project/task where you solved a technical problem, explaining your role and how you selected the appropriate techniques, procedures and methods used. Identify the way you used your knowledge and scientific, technical, engineering or ICT principles.

Competence A1 - Review and select appropriate techniques, procedures, and methods to undertake tasks.

Competence A2 - Use appropriate scientific, technical, or engineering principles.

Hopefully, you saw the relationship between the Recognized Standard **and** the application form **and** can start to understand why you are asked the assessment questions in this format **and** how it helps you to demonstrate all the required points **and** key phrases for a successful application.

So, what does this mean for an individual in their specific field of electrics? Let us draw from industry a relevant example to help us better identify jobs or tasks that could apply to competences A1 and A2 to help with question 1.

Industry - Example:

I was working on a new build housing development, for a main contractor who was delivering 300 units for their client. My role involved 1st and 2nd fixing including final testing of the electrical installation for each plot.

During 1st fixing, I followed and checked the issued drawings for each specific house type. I used industry approved materials, and my installation methods were derived from my gained electrical qualifications and experience. I installed the appropriately sized cables in the permitted zones to serve each depicted point and made sure they were secured correctly. Prior to any works I completed a risk assessment for the task at hand.

During 2nd fixing, I installed all the lighting and power points ensuring all correct procedures had been followed which included; correct identification of cable cores, only live conductors were being switched and all manufacturer's instructions were followed with consideration for tightness. (A1 - Review and select appropriate techniques, procedures and methods to undertake tasks.)

Prior to testing, I requested a permit to work, performed a safe isolation procedure. I used an approved lock-off device kit and installed the correct signage to limit any associated risk to other people. I confirmed the IP rating of the installed equipment and checked it was fit for purpose, taking the rating of the protective devices into consideration. I carried out all inspection and testing in accordance with the BS7671 and approved methods in the GN3.

During the live testing, I found one of the two 30mA RCDs installed on the Consumer Unit was not disconnecting within the permitted time as detailed in BS7671 i.e., >40ms at 5x the rated current. My test equipment was correctly calibrated, and all the results so far had been clear from faults and showed good all-round readings, which is to be expected from a new build installation. My experience was pointing towards a faulty device. The RCD also failed a 1x test and a ramp test to further verify my suspicions, so I replaced the device with a new one and repeated my testing procedure. This solved the issue and I continued with the inspection and testing. I notified my supervisor of the fault and gave the faulty RCD to him to send back to the wholesaler, so it would not be accidentally installed by someone else. I closed out all permits associated with this task. All My results were recorded on an approved BS model form checking all verification criteria had been correctly completed.

I then issued the results to my supervisor for review before the plot was energized and deemed safe to be put into continued use.

(A2 - Use appropriate scientific, technical or engineering principles)

Assessment Question 2

As we saw, question 1 is very much asking you to demonstrate A1 & A2. Question 2, is very much looking for the same thing, with reference to B1 & B2.

Let's look at the B competencies inclusions and the relationship with Question 2.

Competence B - Contribute to the design, development, manufacture, construction, commissioning, operation or maintenance of products, equipment, processes, systems or services

B1 - Identify problems and apply appropriate methods to identify causes and achieve satisfactory solutions. Show an example of how you have used electrical test equipment to monitor and assess the condition of an electrotechnical installation or system, in order to: Identify the source of a fault, or Identify areas where electrical efficiencies can be made, or make recommendations for improvement or repair

B2 - Identify, organize and use resources effectively to complete tasks, with consideration for cost, quality, safety, security and environmental impact. Illustrate how you make decisions about: What Regulations, people, materials or plant to utilize during the design or maintenance of an electro technical installation, or planning inspections of existing installations, or how to use new industry techniques, tools and technologies to streamline and improve the efficiency of the installation, commissioning or inspection process or How you ensured the safety of yourself and those around you during any commissioning testing or installation work And how you addressed sustainability and minimized the environmental impact Describe how you have contributed to best practice methods of continuous improvement, e.g., ISO 9000.

Assessment Question 2 - *Give an example of how you have identified, planned, and organized the resources needed to effectively complete another project, explaining how you took into consideration cost, quality, safety and any environmental impact. For example, you may have needed to plan safe systems of work and/or identify how you took sustainability into consideration.*

Question 2 may appear at first glance to have similarities as Assessment Question 1; however, you are now being asked to show, or refer to any constraints involved when solving or completing a project.

Where are the constraints? If we look at B1, there is more reference to identifying and recommendations, i.e., your professional opinion. As a professional in electrical installations, you will have already considered the constraints influencing a compliant installation.

If we refer to B2, there is more direct reference to 'Regulations'. You will be familiar with the BS 7671 Wiring Regulations and how to implement this when designing or rectifying electrical installations. Therefore, you can refer to the related section of this Regulation in your answer. Think about words to use which demonstrate how you maintain a safe system of work. For instance, working on a site completing new builds. There would be risk and method statements (RAMS) in place. Within the RAMS, consideration to 'live works' or a 'permit system' would be mentioned. Most certainly, at the very least, a 'safe isolation procedure' would be implemented. Describe what was in the way, i.e., the constraints and how you overcame them.

Assessment Question 3

Ethics and professional registration go hand in hand, one cannot exist without the other. Being fully aware of what is expected of you and what you are signing up to is important. Using the same methodology we applied for questions 1 & 2, we can use the E competencies as an inclusion guide to help formulate our answer to question 3 on the application form.

Competence E is all about your personal commitment and has five parts to it. With help, from Assessment Question 3 on the Electrician EngTech application form, you are expected to demonstrate these attributes, again drawing from your own work and professional history. So, what makes up competence E?

- **E1** - Understand and comply with relevant codes of conduct.
- **E2** - Understand the safety implications of their role and apply safe systems of work.
- **E3** - Understand the principles of sustainable development and apply them in their work.
- **E4** - Carry out and record the Continuing Professional Development (CPD) necessary to maintain and enhance competence in their own area of practice.
- **E5** - Understand the ethical issues that may arise in their role and carry out their responsibilities in an ethical manner.

Assessment Question 3 - *Give examples of where you have applied/upheld ethical principles as defined by the Licensee's Conduct requirements and your organisation's Code of Practice. Show how you undertake engineering tasks in a way that contributes to sustainable development and how you manage and apply safe systems of work. Explain how you identify, carry out and record the CPD necessary to maintain and enhance your competence in your area of work.*

You have probably realised Assessment Question 3 directly asks you to provide an example of how you have applied the 5 attributes which make up the E competence.

How do we approach Assessment Question 3?

E1 and E5 are related and the first part of the question makes reference to how you comply with your organisation's Code of Conduct as well as the Licensee's Code of Conduct that you have signed up to as a member.

You may already be a member of the IET, as either a Technician Member (TMIET), Member (MIET) or an Associate member. This is a commitment in itself as you will have agreed to commit to the guidelines and IET Rules of Conduct when you joined. Many of you will also have a company policy you have signed up to when you started your job. There is no doubt that if you were not abiding by the relevant company policies, you would be reminded of this by your manager, i.e., being late, leaving early, bad or poor workmanship etc.

Most applicants when sitting down trying to formulate a good response to question 3, often feel like they don't have any good working examples to use. This is wrong. You do. Its best to attack Q3 in three separate paragraphs to help get started.

The first part to your answer should be in line with Q1 & Q2, e.g., set the scene. Then, pick a particular job/project where you have upheld your company's (stating you abide) ...and the Engineering Council statement of Ethical Principles.

The engineering councils statement of ethical principles is underpinned by four fundamental principles.

1. Honesty & Integrity
2. Respect for life, law, the environment and public good
3. Accuracy and rigour
4. Leadership and communication

There is no need to go overboard on an example using all 4 of these all rolled into one. A good solid example of you on a project where perhaps you spotted "unsafe working practices" by others. The site rules stated during induction on that project (perhaps a building site covered under CDM) applied to all, you used the awareness to effectively insure a safe system of work to your activities and spotted someone attempting to use a set of steps, when hop-ups or platforms were the only permitted access equipment stipulated when working inside the units. The site had a system in place where you were able to report such incidents, so you did and you informed you line supervisor for good measure.

Second part to your answer should focus on sustainability. The project you were previously describing may also suit in this instance, as it may have been a sustainable project, like installing Solar PV or Electric vehicle charging points or a maintenance job swapping out fluorescent lighting for LED's. If so, state why this is important and your role for seeing this project through. If your role doesn't include such opportunities then the easiest way to demonstrate you are being sustainable in your role, is to apply the three R's of sustainability, Reduce, Reuse, Recycle to what you do and give an example. E.g., being material sensitive to reduce the amount of waste cable or, moving or refitting/reusing temporary task lighting, rather than ordering more or, simply separating out the waste from projects like sending old light fittings off to be officially recycled and splitting out the cardboard from the cable during clean ups and using the correct skips.

The third part of your answer can be the easiest for some. We all carry out CPD by lots of different means (training, toolbox talks, webinars etc.), the simple way to address this section isn't just to state what CPD you do, it's also how you record it. If you use the IET career manger for logging CPD, then say that, it's more then enough. If you use you your own or the company's template/ system, then just describe it to the assessor.

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