Unit Title:		**Technical fault diagnosis**
OCR unit number:		28
Unit reference number:		A/601/3293
Level:		3
Credit value:		12
Guided learning hours:		75

Evidence for this unit can only be achieved through actual work in a work environment. Simulation is not permissible for any competence based unit.

Unit aim

This unit develops a detailed understanding of the process, methods and information that are used in the diagnostic process and their practical application in the diagnosis to a range of faults. It also covers selection of remedies for identified faults and maintenance of relevant records.

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
The Learner will: 1 Understand the processes, methods and information that are used in the diagnostic process	**The Learner can:** 1.1 Describe the steps of the diagnostic process including: • fault validation • information gathering • information analysis • solution identification 1.2 Describe the types of diagnostic information that are commonly needed: • problem description • problem history • problem location • technical Information on a specified range of products including the system under investigation 1.3 Explain the following diagnostic methods and give examples of their appropriate use: • substitution • replication • performance and functional testing • environment change	• the sequence of actions to be systematically followed when carrying out fault diagnosis where there are a wide range of causes or this is a new or unfamiliar fault. This includes the methods and tools used, the information that is to be recorded and the systems used for recording the information • the importance of fault validation, information gathering, information analysis and solution identification • the use of a wide range of diagnostic methods and tools including: substitution, replications, performance and functional testing and environment change • a range of considerations affecting fault diagnosis and how they can be addressed

Learning Outcomes	Assessment Criteria	Knowledge, understanding and skills
	1.4 Explain how the following considerations can affect fault diagnosis: • minimisation of service disruption during diagnostics • individual responsibility and authority • escalation procedure • service level agreements 1.5 Interpret detailed technical information on a range of products	• the types of information related to the problem being diagnosed and the process of using the information. They should also be able to describe when the information would be required including; resource allocation, trend analysis, financial • how to interpret a broad range of technical information for a wide variety of products
2 Be able to diagnose faults with a wide range of causes.	2.1 Select and correctly use appropriate diagnostic tools to carry out non-routine diagnosis 2.2 Select and use given sources of diagnostic and other technical information 2.3 Identify and interpret the relevant information to support the diagnosis 2.4 Analyse information to diagnose faults with a wide range of causes, using at least three of the following approaches: • trend analysis • what-if scenarios • gap analysis • identification of cause and effect • flow charts 2.5 Describe possible ways to prevent reoccurrence of diagnosed faults	• a wide range of diagnostic tools e.g.: electrical / electronic test instruments; on-board self-test programs; loop-back devices; on-line/remote monitoring software; diagnostic software, appropriate to the particular fault • a wide range of sources of diagnostic and technical information including: taking measurements; observing and recording system performance; interviewing relevant personnel, obtaining technical specifications and fault history, product technical specifications and troubleshooting information • how to validate and accurately record information to support the diagnosis • how to select and use a logical systematic approach to identify the root cause of faults from gathered information • of ways of preventing reoccurrences of identified faults

| 3 | Select remedies for non-routine faults | 3.1 | Select a suitable remedy to rectify identified faults taking into account the following:
• business or service impact
• resource and skill availability
• ease of implementation
• cost effectiveness
• performance
• compatibility
• time
• permanence

3.2 Identify possible ways to prevent reoccurrence of diagnosed faults | • how to select appropriate and relevant remedies taking into account a range of factors
• different ways of preventing reoccurrences of identified faults |
| 4 | Maintain diagnosis and remedy records | 4.1 | Accurately document the diagnosis activities undertaken including:
• fault description
• supporting information
• diagnostic tools etc used
• cause of fault
• remedy selected | • the requirements for documenting diagnosis activities |

Assessment

It is the assessor's role to satisfy themselves that evidence is available for all performance, knowledge and evidence requirements before they can decide that a candidate has finished a unit. Where performance and knowledge requirements allow evidence to be generated by other methods, for example by questioning the candidate, assessors must be satisfied that the candidate will be competent under these conditions or in these types of situations in the workplace in the future. Evidence of questions must include a written account of the question and the candidate's response. Observations and/or witness testimonies must be detailed and put the evidence into context i.e. the purpose of the work etc.

In addition to the recognition of other qualifications, candidates may claim accreditation of prior achievement for any of the elements assessment criteria or complete units of competence, as long as the evidence fully meets the criteria and the candidate can prove that it is all their own work. It is important also that assessors are convinced that the competence claimed is still current. If the assessors have some doubts, they should take steps to assess the candidate's competence directly. An initial assessment of candidates is recommended.

All the learning outcomes and assessment criteria must be clearly evidenced in the submitted work, which is externally moderated by OCR.

Results will be Pass or Fail.

Guidance on assessment

Evidence can reflect how the candidate carried out the process or it can be the product of a candidate's work or a product relating to the candidate's competence.

For example: The process that the candidate carries out could be recorded in a detailed personal statement or witness testimony. It is the assessor's responsibility to make sure that the evidence a candidate submits for assessment meets the requirements of the unit.

Questioning the candidate is normally an ongoing part of the assessment process, and is necessary to:

• test a candidate's knowledge of facts and procedures

• check if a candidate understands principles and theories *and*

• collect information on the type and purpose of the processes a candidate has gone through

• candidate responses must be recorded

It is difficult to give a detailed answer to how much evidence is required as it depends on the type of evidence collected and the judgement of assessors. The main principles, however, are as follows: for a candidate to be judged competent in a unit, the evidence presented must satisfy:

• all the items listed, in the section 'Learning Outcomes'

• all the areas in the section 'Assessment Criteria'

The quality and breadth of evidence provided should determine whether an assessor is confident that a candidate is competent or not. Assessors must be convinced that candidates working on their own can work independently to the required standard.

Additional information

For further information regarding administration for this qualification, please refer to the OCR document '*Admin Guide: Vocational Qualifications'* on the OCR website www.ocr.org.uk .