OCR
Oxford Cambridge and RSA

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| **Unit Title:** | **Technical fault diagnosis** |
| OCR unit number: | 27 |
| Unit reference number: | T/601/3292 |
| Level: | 2 |
| Credit value: | 9 |
| Guided learning hours: | 45 |

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 introduces knowledge of the process, methods and information that are used in the diagnostic process and their practical application in the diagnosis of a limited 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 |
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| **The Learner will:**<br>1 Know the process, methods and information that are used in the diagnostic process | **The Learner can:**<br>1.1 Identify the steps of the diagnostic process including:<br>• fault validation<br>• information gathering<br>• information analysis<br>• solution identification<br>1.2 Describe the types of diagnostic information that are commonly needed and their purpose<br>1.3 Describe common diagnostic methods to include:<br>• substitution<br>• replication<br>• performance and functional testing<br>• environmental change<br>1.4 List typical considerations affecting fault diagnosis, e.g.:<br>• minimisation of service disruption during diagnostics<br>• individual responsibility and authority<br>• escalation procedure<br>• level of service | • how to diagnose faults with a known range of causes and assist in the diagnosis of other faults, outside of their experience<br>• the sequence of actions that must be followed to systematically carry out fault diagnosis. This should include the methods and tools to be used, information to be recorded and recording systems<br>• why diagnostic information is required e.g. accurate fault diagnosis, correct fault rectification and prevention of new or recurrent occurrences<br>• the type of diagnostic information required e.g. problem description, problem history, problem location, problem specifications, time and expense records, any part used, actions taken and outcome |

| Learning Outcomes | Assessment Criteria | Knowledge, understanding and skills |
|---|---|---|
| 2 Apply processes to diagnose faults with a known range of causes and assist in the diagnosis of other faults | 2.1 Correctly use appropriate diagnostic tools e.g.:<br>• electric/electronic test instruments<br>• on-board self-test programs<br>• loopback devices<br>• on-line/remote monitoring<br>• diagnostic software<br>2.2 Effectively use given sources of information to support diagnosis<br>2.3 Analyse information to identify the cause of faults, using two of the following approaches:<br>• gap analysis<br>• identification of cause and effect<br>• flow charts | • a variety of diagnostic tools<br>• how to follow a sequence of actions in order to systematically carry out or assist in the diagnosis of faults. The must be able to identify, validate and record relevant sources of information including:<br>- taking measurements<br>- observing and recording system performance<br>- interviewing relevant persons<br>- obtaining technical specifications<br>- fault history<br>• how to use relevant information to identify the root cause of the problem and select appropriate ways to prevent reoccurrence |
| 3 Select fault remedies from given alternatives | 3.1 Select, from given alternatives, a suitable remedy to rectify identified faults taking into account the following:<br>• business or service impact<br>• resource and skill availability<br>• ease of implementation<br>3.2 Identify possible ways to prevent reoccurrence of diagnosed faults | • a range of remedies for rectifying faults including where to locate information if not readily available<br>• ways to prevent the reoccurrence of faults |
| 4 Maintain diagnosis and remedy records | 4.1 Accurately document the diagnosis activities undertaken including:<br>• fault description<br>• supporting information<br>• diagnostic tools used etc<br>• cause of fault<br>• remedy selection | • the records and procedures for documenting fault 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 .