

## **8.1 Examination content and grading for Level 1 and Level 2 一级和二级考试内容及评分**

### **8.1.1 General examination element 通用考试部分**

The general examination element shall be a minimum of 40 multiple choice questions and shall be selected randomly from the certification body's or authorized qualification body's collection of general examination element questions valid at the date of examination.

通用考试科目至少 40 道选择题，并应在考试当日从认证机构或授权资格鉴定机构收集的有效的通用考试题库中随机选取。

### **8.1.2 Specific examination element 专业考试部分**

The specific examination element shall be a minimum of 20 multiple choice examination questions selected from the certification body's or authorized qualification body's collection of specific examination element questions valid at the date of examination.

专业考试科目至少 20 道选择题，并应在考试当日从认证机构或授权资格鉴定机构收集的有效的通用考试题库中随机选取

If the specific examination element covers two or more sectors, the minimum number of questions shall be at least 30, taking into account the industrial or product sectors concerned (see Annex A).

如果专业考试科目涵盖两个或多个的门类，考虑到有关的工业或产品门类，试题的最低数量应至少为 30 个（见附录 A）

### **8.1.3 Practical examination element**

实际操作考试科目

8.1.3.1 The practical examination element shall involve applying the test to prescribed specimens, recording (and, for Level 2 candidates, interpreting) the resulting information to the degree required, and reporting the results in the required format. Specimens used for training purposes shall not be used for examination.

实际操作考试科目应包括：在指定的试样上进行检测，按要求记录（2 级报考人为解释）结果信息并按规定格式编制检测报告。用于培训的试样不应用于考试。

8.1.3.2 Each specimen shall be uniquely identified and have a specimen master report which includes all of the equipment settings (if applicable) used to detect specified discontinuities. Marking shall not interfere with the practical testing or inspection of the specimen and shall, wherever practicable, be concealed from the candidate while the specimen is being used for examination to prevent potential information correlation by candidates. The specimen master report shall be compiled based upon at least two independent tests, and shall be verified by a Level 3 certificate holder in that method for use in grading examinations. The independent test reports from which the specimen master report is compiled shall be retained as records.

每件试样必须具有唯一标识，并附有试样的标准检测报告，其内容包括检测出试样中指定不连续时的所有设备参数（如适用）。标记不能妨碍实际操作检测或考试。无论如何，考试用的试块，不能让报考人提前知道，以防潜在的信息关联。试样标准检测报告需要基于至少两次独立检测来编写，并经该方法 3 级人员的验证而用于考试评分。编制试样的标准检测报告所依据的独立检测报告应作为记录保存。

8.1.3.3 Specimens shall be sector (one or more) specific, representing field geometries and shall contain discontinuities representative of those likely to occur during manufacturing or in service. They may be natural or artificial. Data sets, digital radio-graphic images and/or films can be used instead of physical specimens, but at least one physical specimen shall be examined.

试样应专属某门类（一个或多个），代表产品的几何形状，并且应含有在制造过程或者在役过程中形成的典型不连续。不连续可以是自然的或人工的。可以用数据集、数字射线图像和/或胶片来代替实物试样，但至少一个实物试样被用于考试。

8.1.3.4 The certification body shall ensure that the number of specimens to be tested is adequate to the level, NDT method and sector concerned, and that the specimens contain reportable discontinuities. The number of specimens to be tested in the Level 1 and Level 2 practical examinations shall be in accordance with Annex B.

认证机构应确保被检试样数量，以满足相关的等级、NDT 方法和门类要求，并且这些试样应含有可供报告的不连续。1 级 2 级实际操作考试被检试样的数量要求见附件 B。

8.1.3.5 The Level 1 candidate shall follow the NDT instruction(s) provided by the examiner.

1 级报考人应按主考人提供的 NDT 作业指导书进行操作。

8.1.3.6 The Level 2 candidate shall select the applicable NDT technique and determine the operating conditions related to a given code, standard or specification.

2 级报考人应选择适用的 NDT 技术，并依据相关的法规、标准或规范确定操作条件。

#### 8.1.4 NDT instruction writing examination element

NDT 作业指导书

8.1.4.1 The NDT instruction writing examination element shall involve the creation of a written NDT instruction by the Level 2 candidate.

无损检测作业指导书的编写考试科目应包括由 2 级考生编写书面的无损检测作业指导书。

8.1.4.2 See Table D.2 for the weighting of the written examination instruction element.

作业指导书的编写打分权重见表 D.2。

#### 8.1.5 Grading of the Level 1 and Level 2 examination 一级和二级考试评分

8.1.5.1 The general, specific, practical and NDT instruction writing examination elements shall be graded separately. When conventional prepared paper-based examinations are used, an examiner shall be responsible for the grading of the examinations by comparison with model answers. E-assessment systems that automatically score candidate responses against stored data and grade the completed written examination according to prepared algorithms may be used. Each correct reply scores 1 point and the mark attributed to the tests is the sum of the points obtained. For the final calculation, the mark of each test is expressed as a percentage.

通用考试、专业考试、实际操作考试和 NDT 作业指导书的编写考试应分别进行评分。当使用传统的预先准备好的纸质试卷考试时，应由一名考官负责通过与标准答案比较来进行考试评分。使用电子评估系统，会根据存储的数据对考生的答题自动评分，并根据已有的运算法则对书面试卷的完成情况给出评分。每个正确的答案

得 1 分，考试的分数是所获分数的总和。在最后的计算中，每项考试的分数以百分比表示。

8.1.5.2 The grading of the practical examination element shall be based on items 1 to 3 in Table 3, with the recommended weighting factors in relation to the level and method as applicable.

实际操作考试科目的评分应基于表 4 中的第 1 至 3 项，其包括了推荐的所使用的相  
关等级和方法的权重因子。

**Table 3.- Subjects and weighting factors for grading - Practical examination  
element**

**表 3—实际操作考试评分的科目与权重**

Item 项 目	Subject 科目	Weighting factor 权重	
		Level 1/1 级 %	Level 2/2 级 %
1	Knowledge of NDT equipment and NDT media. 对无损检测设备和无损检测介质的知识	20	10
2	Application of NDT method 无损检测方法的应用	35	26
3	The detection of indications or discontinuities and reporting 显示或不连续的发现以及编制检测报告	45	64
Total 总 和		100	100

Table D.1 gives guidance on additional details on each item, to be taken into account, as applicable by the examiner.

表 D.1 给出了关于每个项目更多细节的指南，主考人宜适当考虑。

8.1.5.3 For the Level 1 candidate to be eligible for certification, they shall obtain a minimum grade of 70% on each examination element (general, specific and

practical). For the practical examination element, a minimum grade of 70 % shall be obtained for each specimen tested.

1 级报考人员要想获得认证资格，他们必须在每项考试科目《通用、专业和实际操作》中获得至少 70% 的成绩。对于实际操作考试部分，每个检测的试样都应取得至少 70% 的成绩。

8.1.5.4 For the Level 2 candidates to be eligible for certification, they shall obtain a minimum grade of 70% on each examination element (general, specific, practical and NDT instruction writing). For the practical examination element, a minimum grade of 70 % shall be obtained for each specimen tested and NDT instruction writing element, as applicable. The certification body or authorized qualification body may classify some discontinuities as mandatory to be detected and evaluated as unacceptable. The NDT instruction writing element shall be graded in accordance with Annex D.

2 级报考人员要获得认证资格，必须在每项考试科目（通用、专业和实际操作和无损检测作业指导书编写）中取得至少 70% 的成绩。对于实践考试部分，每个检测的试样和无损检测指导书写部分都应取得至少 70% 的成绩，如适用。认证机构或授权的资格认证机构可以将某些不连续归类为必须检测到的内容，并评定为不可接受的。无损检测作业指导书应按照附件 D 的规定进行评分。

## **8.2 Examination content and grading for Level 3 三级考试内容及评分**

### **8.2.1 General 概述**

All candidates for Level 3 certification in any NDT method shall have successfully completed (with a grade of  $\geq 70\%$ ) the practical examination element for Level 2 in the relevant sector and method, except for the drafting of NDT instructions for Level 1. A candidate who is Level 2 in the same NDT method and product sector or who has successfully passed a Level 2 practical examination for the NDT method in an industrial sector, as specified in Annex A, is exempt from passing again the Level 2 practical examination element. This exemption is only valid for the product sectors covered by the industrial sector concerned and, in any other circumstances, the relevant sector is the sector in which the candidate seeks Level 3 certification.

所有申请 3 级认证报考人，必须成功完成 2 级相关方法和门类的实际操作考试科目（分数达到 70%或以上），不包含为 1 级人员编写的作业指导书。拥有与 2 级相同的无损检测方法和产品门类的报考人，或者已经通过无损检测方法中工业门类的 2 级实际操作考试科目的报考人，可以参照附件 A 中的规定，豁免参加 2 级实践考试。此处的豁免仅仅是指有关工业门类所包含的产品门类，在任何其他情况下，相关的门类指的是 3 级报考人员所需报考的门类。

## 8.2.2 Basic examination element 基础考试

8.2.2.1 This written examination shall assess the candidate's knowledge of the basic subjects using at least the number of multiple-choice questions shown in Table 4. Examination questions shall be selected in an unpredictable way from the CB's collection of basic examination element questions valid at the date of examination.

笔试考试应评定报考人在基础学科方面的知识，表 4 是选择题的最低数量。基础考试试题应在考试当天

从认证机构或授权的鉴定机构批准的现行试题库中随机选取。

**Table 4 - Minimum required number of basic examination element questions for Level 3**

**表 4-3 级基础考试试题数量的最低要求**

Item 项目	Subject 科目	Number of questions 题量
A	Technical knowledge in materials science and process technology. 材料科学、加工工艺等技术知识。	25
	Knowledge of the certification body's qualification and certification system based on this document. This may be an open-book examination. 依据本标准认证机构的资格鉴定与认证体系的知识，可开卷考。	10
C <sup>a</sup>	General knowledge of at least four methods as required for Level 2 and chosen by the candidate from the methods given	15 for each test

	<p>in Table 1. These four methods shall include at least one volumetric method (UT or RT)</p> <p>至少四种方法的相当于 2 级要求的通用知识，由报考人在本标准所列方法（表 1）的范围中选择，但这 4 种方法中应至少包括一种体积方法（即 UT 或 RT）</p>	<p>method (total 60)</p> <p>每种方法 15 题（总数 60 题）</p>
<p><sup>a</sup> For item C, the certification body may adjust the number of questions per method for methods impacted by evolving technology, increasing methods and techniques being added.</p> <p>对于项目 C，针对技术发展和不断增加的新方法和新技术的影响，认证机构可调整每种方法的题目数量。</p>		

8.2.2.2 It is recommended that the basic examination element be passed first and remain valid, provided that the first main method examination element is passed within five years after passing the basic examination element. A candidate holding a valid Level 3 certificate is exempt from the need to retake the basic examination element.

建议基础考试首先通过，如果第一个主要方法考试是在基础考试通过后五年内通过的，则基础考试的成绩仍然有效。持有效的 3 级证书的报考人，豁免所需的基础考试。