Level 6 Materials Science Technologist Apprenticeship (ST0675)

AM3: Knowledge Test Guidance

Version 3

Updated 21 March 2023

INTRODUCTION

Although the Standard's assessment plan states that the EPA assessments can be taken in any order, PIABC Limited's preference is that apprentices take and pass the Knowledge Test first as this is the most cost-effective method to confirm competency of the knowledge and skills assigned to this method of assessment. For this reason, PIABC Limited would prefer that it is passed first as this mitigates the risk of launching a project if the apprentice does not possess the complementary underpinning knowledge that supports the other assessment methods.

KNOWLEDGE (Ks)

The Level 6 Materials Science Technologist apprenticeship standard states that all Apprentices will need to develop specialist KSs. These Ks will be generic and/or technology specific, but the subject areas indicated below will provide a foundation for an apprentice development in materials process engineering.

The Ks of the of the Level 6 Materials Science Technologist apprenticeship standard are set out below for AM3:

Knowledge

A Materials Science Technologist will require a thorough understanding of the industry in which they are employed. They will be able to understand and apply the following areas:

K1 Contemporary chemical and physical properties of materials including metals, ceramics, polymers, adhesives, glass, construction materials, composites, and new future materials and their key performance properties.

K2 Up-to-date conceptual and practical chemical and physical properties of materials and how these react to testing and synthesis including the chemical composition of a range of materials such as advanced ceramics, metals, glass, polymers, and their structural manipulation and transformation and problems and advances that may arise during change at a microstructural level.

K7 Practical, conceptual, and technological knowledge of thermodynamics; structural chemistry; solid state chemistry; rheology; microstructures; analytical chemistry; organic chemistry; inorganic chemistry.

K8 Intellectual property rights issues and the implications and importance of patent, non-disclosure issues, and GDPR regulations.

K12 How materials fail in terms of fatigue, wear, impairment, corrosion, stresses, cracking, embrittlement, abrasion and cavitation erosion, including risk and mitigation factors. Understanding and ability to conduct failure testing using, for example, microscopy, macroscopy, and chemical analysis.

K17 Relevant materials science Health & Safety legislative and regulatory requirements relating to employees and clients in an industrial, laboratory, and/or field setting

FORMAT

The Knowledge Test will be a maximum of 60 minutes. It will be a closed book test which means that no reference books or materials can be referred to during the exam.

The test must be taken in a suitably controlled environment that is a quiet space, free from distractions and influence and in the presence of an invigilator. The Invigilator may be the independent assessor, or another external person employed by PIABC Limited. PIABC Limited is responsible for ensuring the security of test materials and that the test remains valid and reliable. PIABC Limited is responsible for verifying the validity of the identity of the person taking the test.

The test consists of 16 questions in total. They are all multiple-choice closed answer questions.

The 16 multiple-choice questions will be worth 1 mark each. Attempt all questions. No marks are lost for incorrect answers.

SAMPLE TEST

A sample test and marking scheme will be made available before the date of the test so the Apprentice knows what to expect on the day.

GRADING

The Knowledge Test will be assessed Pass or Fail; it will not be given a grade.

SUCCESSFUL COMPLETION OF THE END POINT ASSESSMENT

For an apprentice to pass the end point assessment (EPA) as a whole and be deemed to be competent, the apprentice must pass all assessment methods. The AM1: Work-Based Project, AM2: Professional Discussion and the AM3: Knowledge Test. The apprentice will be considered to have failed if they do not meet the criteria outlined in the pass descriptor.

Should the apprentice fail either AM1, AM2 or AM3 they are required to re-sit/re-take that component. The number of times an apprentice is permitted to re-sit/re-take the end point assessment and the date at which they do so is determined by the employer.