T Level Technical Qualification in Engineering, Manufacturing, Processing and Control

8713-331 Fitting and Assembly Occupational Specialism Report (Summer 2024)

Version 1.0

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1.0 08/08/24		

Contents

Foreword

Summer 2024 Results

The occupational specialism qualification is made up of one component, which needs to be successfully achieved to attain the T Level Fitting and Assembly Occupational Specialism.

We discussed the approach to standard setting/maintaining with Ofqual and the other awarding organisations before awarding this year. We have agreed to take account of the newness of qualifications in how we award this year to recognise that students and teachers are less familiar with the assessments (grading-arrangements-for-vtqsand-technical-qualifications-within-t-levels-in-the-academic-year-2023-to-2024), whilst also recognising the standards required for these qualifications.

Introduction

This document has been prepared to be used as a feedback tool for providers in order to support and enhance teaching and preparation for assessment. It is advised that this document is referred to when planning delivery and when preparing candidates for the T Level Technical Qualification (TQ) in Engineering and Manufacturing **Occupational Specialisms.**

This report provides general commentary on candidate performance in the occupational specialism assignment. It highlights common themes in relation to the technical aspects explored within the assessment, giving areas of strengths and weakness demonstrated by the cohort of candidates who sat assessments in the summer 2024 assessment series.

The grade boundaries that were used to determine candidate's final summer 2024 results are also provided. **For summer 2024, as per Ofqual guidance, the approach to grading recognises that these are new qualifications.**

8713-331 Fitting and Assembly Occupational Specialism

Task 1 Planning

The purpose of task one was to create planning documentation in readiness for fitting and assembly operations in the manufacture of a bevel gauge. Documentation required included a Risk Assessment, a Method Statement, a Resource List and a Quality Check Sheet.

Most candidates were able to complete a risk assessment for the fitting and assembly techniques to be undertaken. This included the creation of a template, many of which were professionally formatted and detailed. Many candidates were unable to identify all of the major risk factors which were detailed in the indicative content within the marking grid, a common oversight being the omission of electricity from the risk assessment. Some candidates were also unable to distinguish between the terms risk and hazard, whilst others identified machine tools or hand fitting operations as the hazard.

Method statements produced by the candidates were largely well detailed, following a logical sequence of operations for the manufacture of each component. Some candidates produced individual method statements for each component to be manufactured, whilst others adopted a holistic approach for the complete bevel gauge assembly.

Resource lists were mainly in a tabular format and were comprehensive in detail and were complete with a justification of why the resource was required.

Quality check sheets were also produced in a tabular format by most candidates. Those which were completed fully contained drawing dimensions, tolerances, actual dimensions and comments sections. Some candidates simply used a binary pass or fail system, whilst others used a colour coded green or red system for pass or fail.

Actions providers can take to support assessment preparation for future series:

Providers must ensure that the major risk factors (high risk) and associated risks (medium and low risk) listed in the indicative content for risk assessment are covered in delivery of the occupational specialism for Fitting and Assembly Techniques. Learners should also be familiar with the meaning of the terms hazard and risk and be able to identify specific hazards associated when carrying out fitting and assembly operations.

Candidates should be encouraged to make reference to technical documentation to enhance the outcome of their planning documentation e.g. Zeus Books, Wall Charts, Reference Tables, British and ISO standards, Drill and Tapping Size Charts, Thread and Conversion Tables, engineering drawings, Health and safety regulations and legislation.

Enhanced time management skills would further support candidates in the completion of the four documents required for task one. Some candidates ran out of time and were unable to produce or to fully complete a quality check sheet.

Task 2 Production

The purpose of task two is to prepare the work area for fitting and assembly operations. The candidates were then tasked with producing the individual components for the bevel gauge including body 1, body 2, the divider and the blade using both hand tools and workshop machinery to drawing specifications. The components were then assembled following drilling operations using rivets for permanent fixing and threaded fasteners to join the blade to the assembly. Candidates were also tasked with applying a surface treatment evenly to the bevel gauge assembly. Upon completion of manufacturing and assembly operations, the candidates were tasked with reinstating their work areas.

Some low performing candidates found achievement of the required tolerances challenging. The specified drawing tolerance of ±0.25mm for the length of the bodies, the blade and the divider were where most dimensional inaccuracies were made. This may have been due to candidates allowing insufficient material when marking out in preparation for the preparation of datum edges, radii and the 45-degree angles on the blade and the divider. When candidates had achieved the required datum edges, radii and angles, many of the components were undersize.

Low performing candidates also found the production of the 5.2mm slot difficult to achieve. Errors included positioning of the slot, the width of the slot and the length of the slot. Most candidates utilised a Milling Machine to produce the slots, however, errors were made by the lower performing candidates in positioning the slot drill centrally in the blade.

Low performing candidates also found the alignment of hole positions challenging. Some low performing candidates chose to mark off and drill components individually, this resulted in misalignment of holes, subsequently requiring re-work of the components. High performing candidates marked off and drilled one component and clamped the divider and bodies together for drilling operations to ensure correct alignment.

Actions providers can take to support assessment preparation for future series:

Raise candidate awareness of material allowances for producing components using filing techniques by ensuring candidates fully understand the importance of leaving sufficient material on components when completing the marking and cutting out of engineering components. Candidates should also be aware of the importance of producing datum edges, ensuring that dimensions are measured from the component datum.

Raise candidate awareness of drilling techniques by ensuring the correct alignment of mating components when carrying out drilling operations, it would be beneficial to accurately mark out one of the components, drill the holes and clamp the mating components together to drill through all components in situ. This would serve to ensure that assemblies are correctly aligned.

Task 3A Quality review

The purpose of Task 3A is for candidates to carry out a full quality inspection of the completed bevel gauge assembly, and then to record their findings on the quality check sheet template that they created as part of Task 1. The candidates were then required to demonstrate the functionality of the bevel gauge by marking out a 35-degree angle on a material test piece. The performance of candidates for Task 3A was largely consistent. Low performing candidates were found to have incomplete quality check sheet templates from Task 1, this impacted on their ability to achieve marks in the higher bands of the marking grid as not all of the dimensions were recorded on the check sheets unless amendments were made by the candidates. Higher performing candidates demonstrated effective and accurate use of precision measuring equipment recording all dimensions on their quality check sheets.

Actions providers can take to support assessment preparation for future series:

Candidates need to be more familiar on how to fully utilise the technical drawings in the assignment brief to aid production of the quality check sheet templates to ensure all aspects of the specification are captured in their quality review task.

Task 3B Evaluation and recording

For Task 3B candidates were required to produce a quality inspection report which evaluated the production of the candidate's completed bevel gauge. Candidates had to include the finished sizes of components along with confirmation that the bevel gauge conforms to the dimensional requirements of the specification. Candidates also were asked to explain the quality checks undertaken and the reasons for their use, the result of the marked test piece and the functioning of the bevel gauge. In addition, candidates had to create a concessions list for every facet of the assembly that does not conform to the specification, the reasons for occurrence and strategies to prevent reoccurrence. The quality inspection report also required an evaluation of the fitness for purpose of the finished bevel gauge and the methods of production used by the candidates. Finally, candidates were asked to suggest any improvements or adaptions were required to the bevel gauge, including any reasoning and justifications if adaptions or improvements were not required.

Quality inspection reports produced by low performing candidates lacked evaluative commentary and simply focussed upon a review of activities undertaken. The high performing candidates did expand upon the dimensional aspects of the report offering insight into their own performance along with proposals on how they would improve their performance if they were required to manufacture the bevel gauge again.

Actions providers can take to support assessment preparation for future series:

It is important that candidates address all aspects of the report and manage their time effectively to fulfil all requirements of the task. Completion of similar formative assessment tasks may further aid preparation for this assessment activity.

Task 3C Handover

For Task 3C candidates were asked to hold a meeting with their supervisor or assessor to complete a handover of the bevel gauge. The structure of the meeting included confirmation of the work completed by the candidate, an overview of their findings from the quality inspection report and any suggested improvements to the design of the bevel gauge or the production process used. Finally, candidates were to handover the finished bevel gauge along with the marked-out test piece and the completed quality inspection report.

Handover meetings conducted by low performing candidates were brief and lacked structure. Low performing candidates gave an overview of the work carried out during the assessment, identifying issues they encountered, however, mostly they were unable to suggest improvements to the design or the production processes used. High performing candidates were able to use technical language and industry terminology confidently in describing the processes used, their findings from the quality inspection report and suggested improvements to both processes and design.

Overall, however, most candidates were able to demonstrate a good understanding of industry terminology in the correct context when discussing their individual projects.

Actions providers can take to support assessment preparation for future series:

Candidates should be encouraged to build their confidence in front of a camera during the academic year and formulate verbal presentations in a logical and confident manner utilising industry terminology.

Best practice and guidance to providers on potential areas for improving performance in assessment

It is recommended that providers utilise and deliver the sample assessments as formative assessment to support candidates in preparation for summative assessment. This will not only help prepare candidates but will be an ideal opportunity for marker training and standardisation.

The centre staff and candidates must thoroughly read the assessment to ensure the work is carried out to the specification required. Moderators will be working to the assessment brief and marking grids and making judgments accordingly.

Appropriate PPE should be worn at all times and assessors should ensure that candidates are working safely and should not come to harm or risks to health from the materials used in the assessment.

Where photographic evidence is requested ensure completed components and the completed assembly are included.

Photographs do not need to be great in number but do need to show everything a moderator would require to be able to perform the remote moderation work. Photographs need to be of sufficient resolution to enable “zooming in” to determine quality. Photographs should be collated into one document, and well labelled, and with commentary if possible. Videos will need to show specific and important points of the assessment, for instance the candidate completing quality reviews and handover activities. Utilisation of the Photographic Evidence Guidance Document would support providers to capture relevant and valuable information for marking and moderation purposes to support practical observation feedback.

Providers should ensure that practical observation forms are detailed, covering all aspects of the activity being observed. The practical observation records should contain accurate information, specific to the candidate being observed and offer differentiating commentary between individual candidate’s performance utilising the marking grid terminology. They should also identify areas of strength and weakness to distinguish between the different qualities of performance and to facilitate accurate allocation of marks once all evidence has been submitted.

Support materials

Sample and Past Occupational Specialism (OS) Assessments:
It is recommended that Providers utilise and deliver the **sample OS** as well as **past OS** (if available) as formative assessment to support candidates in preparation for summative assessment.

Sample and past OS (if available): T Level Practical Assignment - Fitting and Assembly Technologies: Sample Assessor Pack (cityandguilds.com)

Guide Standard Exemplification Material (GSEM) Assessments:
It is also recommended that Providers utilise the **GSEMs** to help understand the standard required to achieve a Distinction and Pass grade.

8713-331 OS Distinction GSEM: T Level Technical Qualification in Engineering, Manufacturing, Processing and Control – Fitting and Assembly – Guide Standard Exemplification Materials - Distinction (cityandguilds.com)

8713-331 OS Pass GSEM: T Level Technical Qualification in Engineering, Manufacturing, Processing and Control – Fitting and Assembly – Guide Standard Exemplification Materials – Threshold Competence (cityandguilds.com)

TQ Occupational Specialism Assessment Process Guide:
The guide gives support to Providers in preparing for and delivering T Level Occupational Specialism assessments.

Link: TQ Occupational Specialism Assessment process guide (cityandguilds.com)

Events and Webinars:
City & Guilds run free webinars and events throughout the year on preparing for and delivering the T Level Occupational Specialisms. The below link provides details on upcoming in person events, live webinars, on-demand webinars and preparation for the Occupational specialism assessment.

Link: Events and webinars - T Levels | City & Guilds (cityandguilds.com)

Grade boundaries

The table below shows the grade mark ranges for the Occupational Specialism **for the summer 2024 series.**

Grade	Mark range 8713-331
Distinction	68-90
Merit	51-67
Pass	35-50
Unclassified (U)	0-34

Get in touch

The City & Guilds Quality team are here to answer any queries you may have regarding your T Level Technical Qualification delivery.

Should you require assistance, please contact us using the details below:

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Web chat available **here**.