T-LEVELS | IfATE Institute for Apprenticeships and Technical Education

T Level Technical Qualification in Design and Development for Engineering and Manufacturing (8714-31)

Mechanical (321)

Practical Assignment Sample Candidate Pack

First teaching from September 2022

Version 2.0

City & Guilds | eal

Contents

Version and date	Change detail	Section
2.0 January 2024	Permitted parameters around the lifting device operations amended	2. Assignment brief and design criteria

1. Assessment

This assessment is for the Mechanical Engineering Occupational Specialism component of the Technical Qualification. This pack consists of a practical assignment brief, including drawings and diagrams as necessary, that you will need to use to complete your assessment tasks.

2. Candidate Guidance

General guidance

This is a formal assessment that you will be marked and graded on. You will be marked on the quality and accuracy of the work you produce. It is therefore important that you carry your work out to the highest standard you can.

Plagiarism

Plagiarism is the failure to acknowledge sources properly and/or the submission of another person's work as if it were your own. Plagiarism is not allowed in this assignment.

This assignment is an assessment of your abilities, so the work submitted must be all your own and carried out under the conditions stated. You will be asked to sign a declaration that you have not had any help with the assignment. Your assessor is allowed to give you some help understanding the instructions if necessary, but they will record any other guidance you need, and this will be taken into account during marking.

Where research is allowed, your assessor must be able to identify which work you have done yourself, and what you have found from other sources. It is therefore important to make sure you acknowledge sources used and clearly reference any information taken from them (e.g. providing as a minimum a list of web addresses / books / articles etc used).

Timings and planning

You are advised to study the details of the assessment before starting.

You should check with your assessor that you have all the relevant materials, equipment and information/data sources that you need before starting the assessment.

You should take care when planning to make sure you have divided the time available between parts of the assignment tasks appropriately. Timings for tasks are provided within this pack to support with planning and time allocation.

If you have a good reason for needing more time, you will need to explain the reasons to your assessor and agree a new deadline date. Changes to dates will be at the discretion of the assessor, and they may not mark work that is handed in after the agreed deadlines.

Any requested changes to deadlines must be agreed by both your assessor and City & Guilds.

Word counts

Typical word counts are to be used as approximates for guidance to support the production of sufficient evidence. The marking will relate to the quality of the evidence produced and not whether the word count have been met.

Health and Safety

You must always work safely, in particular while you are carrying out practical tasks.

You must always follow any relevant Health and Safety regulations, Risk Assessments and codes of practice in line with centre requirements.

If your assessor sees you working in a way that is unsafe for yourself or others, they will highlight the issue and ask you to stop the task immediately. Your assessor will not be able to reassess you until they are sure you are ready for assessment and can work safely.

Presentation of work

Presentation of work must be neat, legible and appropriate to the task, and evidence required for submission.

You should make sure that each piece of evidence including any forms are clearly labelled with your name and the assignment reference.

All electronic files must be given a clear file name that allows your assessor to identify it as your work.

Written work may be word-processed or handwritten unless stated otherwise.

All sketches and drawings should be neat, tidy and annotated.

Calculations should be set out clearly, with all working shown, as well as any assumptions made. You should use appropriate units at all times, consistent with the requirements of the assignment.

Instructions for this assignment

Ensure you read all the provided assessment information issued by the assessor.

You must work independently and not share your work with any other candidates in these supervised assessment sessions.

Your work will be kept secure during any supervised breaks that are taken.

Internet access is **not** allowed, unless otherwise stated in the task.

You must complete all the tasks and present all evidence that is detailed in each task.

This assessment booklet contains the assignment brief.

The tasks have been separated into four individual documents which will be handed to you at the start of each task.

Within each task you will find the following:

- **Conditions of assessment:** This will tell you the duration and rules you must follow when completing a task.
- **Controlled conditions:** This will tell you the rules you must follow when completing each task e.g. You must not share or discuss your work with other candidates.
- **What must be produced for marking:** This describes the evidence you must submit when the task is completed. Be aware failure to submit any evidence requested can adversely affect your overall mark for the assessment.
- **Additional evidence for this task:** This describes other forms of evidence that will be collected by the assessor to support the marking of your performance. This will often include but not limited to photographic and video evidence

Assessment themes

You will be assessed against a number of assessment themes. This assignment has a total of 90 marks. The table below shows the weighting of the marks for each of the assessment themes.

Assessment theme	Weighting %
Health and safety	13%
Design and planning	37%
Manufacturing	30%
Reports	20%

3. Assignment brief

You are a mechanical engineer employed by an engineering company. The company have a large stores area for parts and materials.

You have been asked to design a manually-powered mechanical lifting device that will be used in the stores area. The aim of this device is to reduce the effort required from the workers in the stores area. Figure 1 shows an illustration of the lift required.

The device must be capable of lifting a cuboid box of maximum mass 15 kg. The maximum width, depth and height of the box are each 500 mm. The box is in the stores area on a picking shelf surface which is at the same height as the lifting platform. It is then pushed by a human worker onto the flat lifting platform of the lifting device. The surface of the lifting platform should be adjusted to 100 mm above ground level, so it is at the same height as the shelf. The box must then be safely raised to a height of 1 m. It will then be pushed off onto a table by a human worker and the platform will be lowered to await the next box.

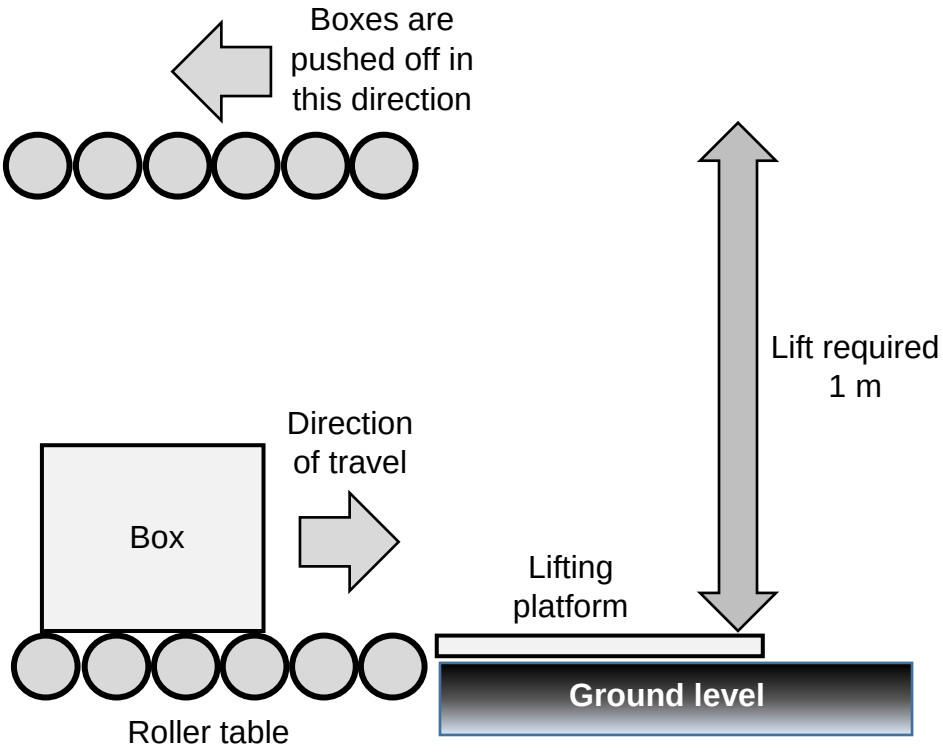

Figure 1

Design Criteria

The design criteria for this application are:

- the device must be capable of lifting a cuboid box of maximum width, depth and height 500 mm
- the device must be capable of lifting a maximum mass of 15 kg
- the device must be able to lift the box 1m and return to its start position
- the surface of the lifting platform must be level with the top of the roller table upon which the box arrives, which is 100 mm above ground level
- a human worker must be able to pull the box onto and push the box off the lifting platform
- the lifting activity must be carried out safely
- the lifting device must be manually powered
- the lifting device must be assembled as a permanent product.

This assignment has a time allocation of **34 hours**.