WJEC LEVEL 1 AND 2 ENGINEERING – DESIGN, MANUFACTURE, AND PROBLEM SOLVING PRACTICE EXAM (SAMPLE)

STUDY GUIDE



SAMPLE STUDY GUIDE WITH LIMITED QUESTIONS

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Table of Contents

Copyright 1

Table of Contents 2

Introduction 3

How to Use This Guide 4

Questions 5

Answers 8

Explanations 10

Next Steps 15

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Introduction

Preparing for a certification exam can feel overwhelming, but with the right tools, it becomes an opportunity to build confidence, sharpen your skills, and move one step closer to your goals. At Examzify, we believe that effective exam preparation isn't just about memorization, it's about understanding the material, identifying knowledge gaps, and building the test-taking strategies that lead to success.

This guide was designed to help you do exactly that.

Whether you're preparing for a licensing exam, professional certification, or entry-level qualification, this book offers structured practice to reinforce key concepts. You'll find a wide range of multiple-choice questions, each followed by clear explanations to help you understand not just the right answer, but why it's correct.

The content in this guide is based on real-world exam objectives and aligned with the types of questions and topics commonly found on official tests. It's ideal for learners who want to:

- Practice answering questions under realistic conditions,
- Improve accuracy and speed,
- Review explanations to strengthen weak areas, and
- Approach the exam with greater confidence.

We recommend using this book not as a stand-alone study tool, but alongside other resources like flashcards, textbooks, or hands-on training. For best results, we recommend working through each question, reflecting on the explanation provided, and revisiting the topics that challenge you most.

Remember: successful test preparation isn't about getting every question right the first time, it's about learning from your mistakes and improving over time. Stay focused, trust the process, and know that every page you turn brings you closer to success.

Let's begin.

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How to Use This Guide

This guide is designed to help you study more effectively and approach your exam with confidence. Whether you're reviewing for the first time or doing a final refresh, here's how to get the most out of your Examzify study guide:

1. Start with a Diagnostic Review

Skim through the questions to get a sense of what you know and what you need to focus on. Your goal is to identify knowledge gaps early.

2. Study in Short, Focused Sessions

Break your study time into manageable blocks (e.g. 30 – 45 minutes). Review a handful of questions, reflect on the explanations.

3. Learn from the Explanations

After answering a question, always read the explanation, even if you got it right. It reinforces key points, corrects misunderstandings, and teaches subtle distinctions between similar answers.

4. Track Your Progress

Use bookmarks or notes (if reading digitally) to mark difficult questions. Revisit these regularly and track improvements over time.

5. Simulate the Real Exam

Once you're comfortable, try taking a full set of questions without pausing. Set a timer and simulate test-day conditions to build confidence and time management skills.

6. Repeat and Review

Don't just study once, repetition builds retention. Re-attempt questions after a few days and revisit explanations to reinforce learning. Pair this guide with other Examzify tools like flashcards, and digital practice tests to strengthen your preparation across formats.

There's no single right way to study, but consistent, thoughtful effort always wins. Use this guide flexibly, adapt the tips above to fit your pace and learning style. You've got this!

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Questions

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1. What is the purpose of stakeholder analysis in the design process?

A. To identify all parties affected by the product, understand their needs, and involve them in design decisions

B. To ignore user needs

C. To cut costs at all expense

D. To set production quotas

2. What is a primary manufacturing process, and give an example for metals and plastics.

A. Primary processes create basic shapes from raw materials; metal example: casting; plastic example: injection molding.

B. Primary processes create finished parts only.

C. Primary processes are only for plastics.

D. Primary processes are used for packaging products.

3. What describes the ability of a material to stretch or be drawn into a wire?

A. Malleability

B. Ductility

C. Hardness

D. Tensile Strength

4. Which views are typically included in orthographic projections?

A. Front, Top, and Side views

B. Isometric view

C. Section view

D. Detail view

5. What does CAD stand for in design practice?

A. CAD (Computer-Aided Design)

B. Modelling

C. Evaluation

D. Product life cycle

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6. Which term describes a change intended to improve existing performance without starting from scratch?

A. Enhancement

B. Development

C. Modification

D. Evaluation

7. Which process produces a continuous profile by forcing material through a shaped die?

A. Casting

B. Extrusion

C. Forging

D. Injection Moulding

8. In batch production, how are items typically produced?

A. A single item.

B. A set of identical items produced in a run.

C. Continuous production with no stops.

D. Mass customization with varying specifications.

9. Define tensile strength and how it is tested.

A. The maximum load in bending; tested with a bending test.

B. The hardness under scratch; tested with a hardness tester.

C. The density; tested with a hydrometer.

D. The maximum stress a material can withstand when pulled; tested with a tensile test machine until failure.

10. In a cyclical design process, repeating the steps to refine after testing is called what?

A. Revision

B. Verification

C. Development

D. Iteration

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Answers

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1. A
2. A
3. B
4. A
5. A
6. C
7. B
8. B
9. D
10. D

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Explanations

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1. What is the purpose of stakeholder analysis in the design process?

A. To identify all parties affected by the product, understand their needs, and involve them in design decisions

B. To ignore user needs

C. To cut costs at all expense

D. To set production quotas

The main idea is to understand who will be affected by the product and what they need, so their input shapes what is designed. Stakeholder analysis helps identify all the people and groups involved—users, customers, suppliers, regulators, maintenance teams, and the wider community—and to explore their goals, constraints, and concerns. By engaging these stakeholders early and throughout the design, you can capture meaningful requirements, set priorities that reflect real needs, and plan how to communicate and verify success. This leads to a design that is usable, acceptable, compliant, and more likely to be adopted and supported, while also reducing the risk of costly changes later. Options that ignore user needs, chase costs at the expense of quality, or focus only on internal quotas miss the essential social and practical inputs that determine a product's value and feasibility.

2. What is a primary manufacturing process, and give an example for metals and plastics.

A. Primary processes create basic shapes from raw materials; metal example: casting; plastic example: injection molding.

B. Primary processes create finished parts only.

C. Primary processes are only for plastics.

D. Primary processes are used for packaging products.

Primary manufacturing processes are the first stage of turning raw material into a component by forming it into a basic shape. They take the material in its initial form and shape it so that it can be finished or assembled later. For metals, casting fits here because molten metal is poured into a mold to take on a basic geometry. For plastics, injection molding is a primary process where melted plastic is injected into a mold to form a basic shape, then cooled and ejected. This shows why the idea is correct: both examples create foundational shapes from raw material, rather than producing a finished part or focusing only on plastics or packaging.

3. What describes the ability of a material to stretch or be drawn into a wire?

A. Malleability

B. Ductility

C. Hardness

D. Tensile Strength

Ductility describes how much a material can be stretched or drawn into a wire under tensile load. It's about plastic deformation in tension: materials with high ductility, like copper or certain steels, can elongate significantly before breaking, which is why they're used for wires. This differs from malleability, which is the ability to deform into sheets under compressive forces; hardness, which measures resistance to surface indentation or scratching; and tensile strength, which is the maximum stress a material can withstand before failing—ductility specifically focuses on how much the material can be stretched rather than how strong it is or how it deforms in compression.

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4. Which views are typically included in orthographic projections?

A. Front, Top, and Side views

B. Isometric view

C. Section view

D. Detail view

Orthographic projections use perpendicular views to capture an object's true dimensions without perspective distortion. The standard set shows the front view, the top (plan) view, and the side view. The front view reveals height and width, the top view shows width and depth, and the side view displays height and depth. Together these three views provide all the necessary measurements to describe the shape fully. An isometric view is a pictorial that helps visualize the object in 3D, but it doesn't give true dimensions in a single view, so it isn't part of the orthographic set. Section and detail views are additional specialized views used to reveal internal features or enlarged areas, not the basic trio used to convey the external geometry.

5. What does CAD stand for in design practice?

A. CAD (Computer-Aided Design)

B. Modelling

C. Evaluation

D. Product life cycle

In design practice, CAD stands for Computer-Aided Design. It means using computer software to help create, edit, analyze, and communicate design ideas. This is the best choice because it explicitly defines CAD as a computer-assisted method for design work. The other terms describe processes or concepts (modelling, evaluation, product life cycle) but do not represent the acronym itself. With CAD, designers produce precise drawings and 3D models, add tolerances, run simulations, and easily update or modify designs, which is why CAD is associated with the digital tools used in modern design rather than just generic modelling or assessment.

6. Which term describes a change intended to improve existing performance without starting from scratch?

A. Enhancement

B. Development

C. Modification

D. Evaluation

Changing an existing item to improve its performance without starting from scratch is called modification. It means altering the current design, components, or operating parameters to achieve better results while keeping the original base in place. This fits because you're enhancing what already exists rather than building a new product from the ground up. If you were creating something new, that would be development. If you were just adding features or upgrades without modifying the current item, that might be described as an enhancement, but the scenario specifically centers on altering the existing thing. Evaluation is about judging or measuring performance, not making changes.

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7. Which process produces a continuous profile by forcing material through a shaped die?

A. Casting

B. Extrusion

C. Forging

D. Injection Moulding

Extrusion is the process that produces a continuous profile by forcing material through a shaped die. The die defines the cross section, so as material is pushed (or pulled) through, you get a long, endless length with that constant shape—think channels, tubes, rods, or wires. This works for metals, plastics, and other materials, and can be done hot or cold depending on the material. Casting involves pouring liquid into a mold to create a fixed shape, so you get discrete pieces rather than a long continuous form. Forging shapes material by deforming it with dies, but typically results in individual components rather than an ongoing profile. Injection molding pushes molten material into a mold cavity to form finished parts, also discrete pieces rather than a continuous profile.

8. In batch production, how are items typically produced?

A. A single item.

B. A set of identical items produced in a run.

C. Continuous production with no stops.

D. Mass customization with varying specifications.

Batch production is about producing a defined quantity of identical items in one run before switching to another batch. This approach balances the efficiency of making many units with the flexibility to change products after a batch is completed. Producing just a single item at a time would be inefficient for most operations, and continuous production with no stops isn't consistent with batches that require changeovers between runs. Mass customization implies varying specifications, which would typically mean different batches or frequent changeovers rather than a single uniform run. So the standard way items are produced in batch production is a set of identical items produced in a run.

9. Define tensile strength and how it is tested.

A. The maximum load in bending; tested with a bending test.

B. The hardness under scratch; tested with a hardness tester.

C. The density; tested with a hydrometer.

D. The maximum stress a material can withstand when pulled; tested with a tensile test machine until failure.

Tensile strength is the maximum stress a material can withstand when pulled apart. To determine it, a specimen is gripped in a tensile testing machine and pulled at a controlled rate until it breaks. The force experienced is recorded and, using the original cross-sectional area, engineering stress is calculated (stress = F / A0). The highest stress reached before fracture is the ultimate tensile strength. This test specifically measures how much load a material can carry in tension, unlike bending tests (which measure flexural strength), hardness tests (which measure resistance to indentation), or density (which relates to mass per volume).

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10. In a cyclical design process, repeating the steps to refine after testing is called what?

A. Revision

B. Verification

C. Development

D. Iteration

Iteration is about looping back to the earlier stages of the design cycle after testing to refine and improve the product. When a test reveals how the design falls short or how it can be better, you return to the design decisions—dimensions, materials, processes, or features—and make adjustments, then test again. This repeating sequence continues until the design meets the requirements. It contrasts with revision, which is just making changes to improve something without necessarily re-running the full cycle; verification, which is checking whether the design meets the set criteria; and development, which is the broader act of creating and evolving the product, not specifically the repeated cycle after testing.

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Next Steps

Congratulations on reaching the final section of this guide. You've taken a meaningful step toward passing your certification exam and advancing your career.

As you continue preparing, remember that consistent practice, review, and self-reflection are key to success. Make time to revisit difficult topics, simulate exam conditions, and track your progress along the way.

If you need help, have suggestions, or want to share feedback, we'd love to hear from you. Reach out to our team at hello@examzify.com.

Or visit your dedicated course page for more study tools and resources:

https://wjeclvl1and2engineering.examzify.com

We wish you the very best on your exam journey. You've got this!

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