

Fused Deposition Modelling Practice Test (Sample)

Study Guide



Everything you need from our exam experts!

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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.

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!

Questions

- 1. What is one potential problem that can occur during FDM printing?**
 - A. Layer sticking**
 - B. Stringing**
 - C. Color mixing**
 - D. Filament knots**
- 2. How does temperature affect the FDM process?**
 - A. Temperature fluctuations can improve bonding**
 - B. Temperature has no effect on FDM**
 - C. Temperature fluctuations lead to poor bonding**
 - D. High temperatures always produce better parts**
- 3. How does reducing print speed affect FDM printing?**
 - A. It has no impact on print quality**
 - B. It can lead to improved detail and layer adhesion**
 - C. It decreases filament costs**
 - D. It increases the risk of overheating**
- 4. How does using a larger nozzle diameter influence print speed and quality?**
 - A. Larger nozzles decrease print speed significantly**
 - B. Larger nozzles decrease overall quality but improve speed**
 - C. Larger nozzles increase speed but may reduce detail and precision**
 - D. There is no impact on speed or quality with nozzle size**
- 5. What is the ideal filament temperature range for most PLA materials during FDM printing?**
 - A. 100-120°C**
 - B. 190-220°C**
 - C. 250-270°C**
 - D. 30-50°C**

- 6. How can "shell thickness" impact an FDM print?**
- A. It affects only the printing speed**
 - B. It has no relevance to structural integrity**
 - C. It affects surface finish and structural integrity**
 - D. It only influences the color of the outer layer**
- 7. Which method can be used to prevent warping in FDM prints?**
- A. Increasing the print speed**
 - B. Optimizing bed adhesion**
 - C. Using a lower nozzle temperature**
 - D. Reducing layer height**
- 8. What adjustment can lead to better dimensional accuracy in prints?**
- A. Lowering print speed**
 - B. Increasing infill percentage**
 - C. Calibrating the printer**
 - D. Using a larger nozzle**
- 9. How does filament diameter affect FDM printing?**
- A. It has no significant effect on printing quality**
 - B. It determines the extrusion rate and influences layer resolution**
 - C. It is only relevant for print speed**
 - D. It mainly affects the color of the filament**
- 10. What is a common limitation associated with FDM's surface finish?**
- A. It achieves the best surface quality at minimal layer thickness**
 - B. FDM produces smooth surfaces regardless of layer thickness**
 - C. Thicker layers lead to faster printing but lower surface quality**
 - D. FDM always results in high-detail surface finishes**

Answers

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

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Explanations

1. What is one potential problem that can occur during FDM printing?

- A. Layer sticking
- B. Stringing**
- C. Color mixing
- D. Filament knots

Stringing is a common issue in Fused Deposition Modelling (FDM) printing, particularly when the nozzle travels between different areas of a print without stopping to deposit material. This occurs due to the residual plastic that can ooze from the nozzle, forming thin strands or "strings" between parts of the print. It can interfere with the final appearance of the model, resulting in unwanted artifacts that may require additional cleanup and precision in post-processing. Stringing can be influenced by several factors, including temperature settings, retraction settings, and the type of filament being used. Optimizing the retraction distance and speed, as well as adjusting the temperature of the nozzle, can help mitigate this problem. Understanding stringing is crucial for improving print quality and achieving more aesthetically pleasing results in FDM prints. In contrast, layer sticking typically pertains to adhesion issues between layers that can occur due to insufficient temperature or improper print settings, while color mixing primarily involves the blending of different filament colors during printing, and filament knots relate to physical tangles that can obstruct the feeding mechanism.

2. How does temperature affect the FDM process?

- A. Temperature fluctuations can improve bonding
- B. Temperature has no effect on FDM
- C. Temperature fluctuations lead to poor bonding**
- D. High temperatures always produce better parts

In the context of Fused Deposition Modelling (FDM), temperature plays a critical role in the quality of the printed parts. When the temperature fluctuates or is not properly controlled, it can lead to inconsistent melting of the filament, which in turn affects the adhesion between layers. Poor bonding between layers can result in weakened parts that may be prone to delamination or structural failure during use. Optimizing temperature settings is essential for ensuring that the thermoplastic material is extruded at the right viscosity and can adequately bond with the previous layer before it solidifies. If the temperature is too low, the material might not flow appropriately, leading to a weak bond. Conversely, if the temperature is too high, it can cause overheating, which may also negatively affect layer adhesion. Therefore, maintaining a stable and appropriate temperature is key to achieving high-quality prints with good layer bonding and overall structural integrity.

3. How does reducing print speed affect FDM printing?

- A. It has no impact on print quality
- B. It can lead to improved detail and layer adhesion**
- C. It decreases filament costs
- D. It increases the risk of overheating

Reducing print speed in Fused Deposition Modeling (FDM) can lead to improved detail and layer adhesion for several reasons. When the print speed is reduced, the extruder has more time to carefully lay down each layer of filament. This can enhance the resolution of the details in the print since the nozzle can more accurately place the material, resulting in sharper features and finer details. Additionally, slower printing speeds allow for better layer adhesion. When the filament is extruded at a slower rate, it has more time to fuse into the layer below; this enhances the bond between layers, leading to a stronger and more durable printed object. The reduction in speed helps the material maintain its proper temperature for a longer period as well, promoting better adhesion without risking issues like warping or separation between layers. In contrast, higher print speeds can sometimes lead to compromised quality, where the filament does not adhere properly, resulting in weaker points in the structure or loss of detail in intricate designs.

4. How does using a larger nozzle diameter influence print speed and quality?

- A. Larger nozzles decrease print speed significantly
- B. Larger nozzles decrease overall quality but improve speed
- C. Larger nozzles increase speed but may reduce detail and precision**
- D. There is no impact on speed or quality with nozzle size

Using a larger nozzle diameter in fused deposition modeling has a direct effect on both print speed and quality. When a larger nozzle is utilized, it allows for a greater volume of filament to be extruded simultaneously. This increased extrusion rate can significantly boost the overall print speed, which is beneficial for larger prints or when time efficiency is a priority. However, this advantage in speed comes at the potential cost of detail and precision. A larger nozzle typically means that the layer lines will be thicker, and the finer details (such as intricate features or small text) may not be as well-defined as they would be with a smaller nozzle. This is because the larger openings can't replicate as finely detailed layers, making it more challenging to produce detailed geometries compared to a smaller nozzle that can create finer, more detailed layers. The impact on print quality is particularly noticeable in prints that require high-resolution characteristics, where the smaller nozzle would articulate better and reproduce finer features. Therefore, while larger nozzles facilitate faster production, they can compromise the intricacy and overall quality of the print, thus providing a clear understanding of the trade-offs involved in nozzle size selection.

5. What is the ideal filament temperature range for most PLA materials during FDM printing?

- A. 100-120°C
- B. 190-220°C**
- C. 250-270°C
- D. 30-50°C

The ideal filament temperature range for most PLA materials during Fused Deposition Modelling (FDM) printing is indeed between 190°C and 220°C. This temperature range is optimal because it allows the PLA to melt and flow properly through the printer's nozzle, facilitating good layer adhesion and surface finish. When the filament is heated within this range, it exhibits the right viscosity, enabling it to extrude smoothly while minimizing issues like clogging or inconsistent flow. Operating at temperatures below this range may result in poor extrusion, leading to under-extrusion and weak bonding between layers, while temperatures above this range can cause the filament to degrade. In the context of FDM printing, maintaining the correct temperature is crucial for producing high-quality prints with PLA, as it directly impacts the material's performance characteristics like strength and appearance. The other temperature ranges provided do not align with the requirements for printing with PLA. For example, temperatures like 100-120°C are more suitable for materials that require lower processing temperatures, while 250-270°C is typical for high-temperature polymers such as certain ABS formulations. Additionally, temperatures of 30-50°C are far too low for any FDM filament, as they would not allow for melting and proper extrusion.

6. How can "shell thickness" impact an FDM print?

- A. It affects only the printing speed
- B. It has no relevance to structural integrity
- C. It affects surface finish and structural integrity**
- D. It only influences the color of the outer layer

The concept of "shell thickness" in Fused Deposition Modelling (FDM) is crucial for both surface finish and structural integrity of the printed object. Shell thickness refers to the thickness of the outer walls of the print, which can directly influence how the finished product appears visually and how it withstands mechanical stresses. A thicker shell generally provides a more robust outer layer that enhances the overall strength and durability of the print. It helps in better load distribution during use and can prevent the inner structure from being exposed to damage. Additionally, a thicker shell can improve the surface finish, leading to fewer visible layer lines and a smoother appearance. It allows for better adhesion between layers and can help in managing the effects of warping or other deformations during the cooling process. Conversely, a thinner shell may compromise integrity and result in a less polished appearance, making it crucial to select the appropriate shell thickness based on the intended use of the printed object. It is important to note that shell thickness does not affect aspects such as print speed or color, making option C the most comprehensive and relevant choice.

7. Which method can be used to prevent warping in FDM prints?

- A. Increasing the print speed**
- B. Optimizing bed adhesion**
- C. Using a lower nozzle temperature**
- D. Reducing layer height**

Optimizing bed adhesion is crucial in preventing warping during Fused Deposition Modeling (FDM) printing. When the first few layers of a print do not adhere well to the print bed, the material tends to lift at the corners or edges as it cools, leading to warping. By ensuring the print is securely attached to the build surface, the chances of this happening are significantly reduced. Techniques to improve bed adhesion include using adhesives like glue sticks, painter's tape, or specialized build surfaces designed to enhance grip. Additionally, adjusting the nozzle height so that the extruded material compresses adequately to the surface can further assist in creating a strong bond right from the start of the print. While other methods mentioned may influence the printing process in various ways, they do not directly tackle the primary cause of warping. For instance, increasing print speed could lead to other issues, such as reduced adhesion or poor layer bonding, and using a lower nozzle temperature might lead to inadequate melting of the filament, both of which could exacerbate warping. Reducing layer height can improve print detail but does not specifically address adhesion, which is critical in the first layers to avoid warping.

8. What adjustment can lead to better dimensional accuracy in prints?

- A. Lowering print speed**
- B. Increasing infill percentage**
- C. Calibrating the printer**
- D. Using a larger nozzle**

Calibrating the printer is crucial for achieving better dimensional accuracy in 3D prints. Calibration involves adjusting various settings and components of the printer, such as the stepper motor settings, bed leveling, and extrusion multiplier. When these parameters are correctly set, the printer can produce more accurate and consistent dimensions in the finished model. For instance, if the steps per millimeter for the extruder are not calibrated correctly, the amount of filament extruded may be either too much or too little, leading to discrepancies in the dimensions of the printed object. Similarly, proper bed leveling ensures that the first layer adheres correctly, providing a stable foundation for the rest of the layers, which can influence overall accuracy. While lowering print speed, increasing infill percentage, or using a larger nozzle can have various effects on print quality, these adjustments do not directly address the fundamental issues of printer calibration. Adjustments like speed and infill can influence print time and strength but won't necessarily correct dimensional inaccuracies resulting from an improperly calibrated printer.

9. How does filament diameter affect FDM printing?

- A. It has no significant effect on printing quality
- B. It determines the extrusion rate and influences layer resolution**
- C. It is only relevant for print speed
- D. It mainly affects the color of the filament

The diameter of the filament used in Fused Deposition Modelling (FDM) printing plays a crucial role in determining the extrusion rate of the material. The extrusion rate is critical because it directly affects how much filament is fed into the hot end of the 3D printer in a given period. A larger filament diameter means that more material will pass through the nozzle at a time, potentially increasing the extrusion rate, while a smaller diameter will reduce this rate. Additionally, the filament diameter influences layer resolution, which is the thickness of each layer being printed. Different diameters can affect the printer's ability to achieve finer details or thicker layers, which in turn impacts the overall print quality. For instance, using a smaller diameter filament can allow for more precise and detailed prints, as it can create thinner layers that enhance the intricate features of a model. The significance of filament diameter in FDM printing extends beyond just the amount of filament extruded; it is integral to achieving desired print characteristics, including surface finish and dimensional accuracy, thereby making it an important consideration for any FDM print job.

10. What is a common limitation associated with FDM's surface finish?

- A. It achieves the best surface quality at minimal layer thickness
- B. FDM produces smooth surfaces regardless of layer thickness
- C. Thicker layers lead to faster printing but lower surface quality**
- D. FDM always results in high-detail surface finishes

In Fused Deposition Modelling (FDM), surface finish is significantly influenced by layer thickness. When using thicker layers, the printing process is faster, which can lead to a lower overall surface quality. This is primarily because thicker layers result in more pronounced visible layer lines and irregularities, making the surface rougher. Choosing thinner layers can improve the surface finish, as they allow for a more refined detail and smoother transitions between each layer. However, while thinner layers improve quality, they also require more time to print. Thus, there is a trade-off between print speed and surface quality that is characteristic of FDM. This understanding emphasizes why thicker layer heights typically degrade surface finish, supporting the correct answer regarding the common limitations of FDM in achieving smooth surfaces.

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://fuseddepositionmodelling.examzify.com>

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