GATE General Aptitude and CS Solutions 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 the term for a cycle in a graph that visits each vertex exactly once and returns to the starting vertex?**

   A. Hamiltonian Cycle

   B. Eulerian Cycle

   C. Cycle

   D. Path

2. **Which protocol enables clients to manage emails on the server and retrieve messages, without downloading them permanently?**

   A. IMAP

   B. POP3

   C. SMTP

   D. FTP

3. **What term describes a correspondence between two sets where each element of the first set is paired with a unique element of the second set and vice versa?**

   A. Bijection

   B. Injection

   C. Surjection

   D. Function

4. **What term describes the total amount of money spent on a project, including materials and labor?**

   A. Expenditure

   B. Cost

   C. Budget

   D. Expense

5. **In parsing theory, what concept represents the set of possible parser states at a given point, including the current input position?**

   A. Closure

   B. State Space

   C. Transition System

   D. Parse Tree

6. What statement is used to perform operations on data stored in a relational database?

A. SQL Query

B. Compiled Program

C. Shell Script

D. XML Command

7. Which formal grammar type has production rules whose left-hand side is a single non-terminal symbol?

A. Context-Free Grammar

B. Regular Grammar

C. Context-Sensitive Grammar

D. Unrestricted Grammar

8. The smallest unit of data that can be transferred between the cache and main memory is called.

A. Cache Block Size

B. Word Size

C. Memory Page

D. Cache Line Size

9. Bandwidth is to the theoretical maximum data transfer rate as throughput is to the

A. Actual achieved data rate

B. Latency

C. Bandwidth

D. Error rate

10. What operation yields the remainder when one integer is divided by another?

A. Modulus

B. Division

C. Quotient

D. Remainder

Answers

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

Explanations

1. What is the term for a cycle in a graph that visits each vertex exactly once and returns to the starting vertex?

A. Hamiltonian Cycle

B. Eulerian Cycle

C. Cycle

D. Path

A Hamiltonian cycle is a cycle that visits every vertex exactly once and returns to the starting vertex. This name comes from the idea of finding a closed tour that goes through all nodes without repeating any vertex. It differs from an Eulerian cycle, which requires traversing every edge exactly once rather than visiting all vertices. A general cycle is a closed loop that may repeat vertices or skip some, and a path is a route that doesn't have to return to the start or cover all vertices. The description in the question matches the Hamiltonian cycle precisely.

2. Which protocol enables clients to manage emails on the server and retrieve messages, without downloading them permanently?

A. IMAP

B. POP3

C. SMTP

D. FTP

This question hinges on how email retrieval protocols differ in where messages live and how they're accessed. The protocol that lets you manage mail directly on the server while you retrieve messages is designed so the messages stay on the server until you explicitly delete them, and actions you take (read/unread, move to folders, flag, delete) stay synchronized across devices. That behavior is what IMAP provides: it keeps a live view of your mailbox on the server, so you can organize and access messages from multiple devices without downloading them permanently. POP3, on the other hand, is geared toward downloading messages to the client; once downloaded, they're typically removed from the server (unless you configure it to leave copies), which makes cross-device management harder. SMTP is used for sending messages, not retrieving. FTP is a general file transfer protocol and has nothing to do with email retrieval or mailbox management. So the protocol that matches the ability to manage emails on the server and retrieve messages without permanently downloading them is IMAP.

3. What term describes a correspondence between two sets where each element of the first set is paired with a unique element of the second set and vice versa?

A. Bijection

B. Injection

C. Surjection

D. Function

A mapping that pairs each element of the first set with a unique element of the second set and also covers every element of the second set is a bijection. This means two things at once: it is one-to-one (different elements of the first set map to different elements of the second set) and onto (every element of the second set is the image of some element from the first). Because of this full, reciprocal pairing, you can always reverse the process with an inverse function. If the sets are finite, a bijection also implies they have the same size. A simple function doesn't require both one-to-one and onto, an injection lacks onto-ness, and a surjection lacks one-to-one-ness, so only a bijection fits the described pairing.

4. What term describes the total amount of money spent on a project, including materials and labor?

A. Expenditure

B. Cost

C. Budget

D. Expense

Expenditure refers to the total money actually spent on a project, including all outlays for materials and labor. It reflects the real cash outflow for the project, not what was planned (budget) or the price tag of items (cost) or the accounting entry for costs in a period (expense). So when describing the complete amount spent on a project, expenditure is the best fit.

5. In parsing theory, what concept represents the set of possible parser states at a given point, including the current input position?

A. Closure

B. State Space

C. Transition System

D. Parse Tree

The closure operation defines the set of parser states (items) active at a given input position by expanding all possible next steps a parser could take. In parsing formalisms like LR and Earley, a state is represented as items with a dot indicating how much of a production has been seen, and the current input position is part of that item. By applying the closure, you include every production for any nonterminal that appears immediately to the right of the dot, at the same input position, so the state reflects all possible continuations from that point. This yields the complete picture of where the parser could be and what it could derive next, which is exactly what's meant by the set of possible parser states at that point. The other terms are broader or refer to different concepts: a state space is the whole collection of states the machine might ever reach, a transition system is the model of moves between states, and a parse tree is a single, fully derived structure rather than the current set of active possibilities.

6. What statement is used to perform operations on data stored in a relational database?

A. SQL Query

B. Compiled Program

C. Shell Script

D. XML Command

Structured Query Language (SQL) is the standard way to perform operations on data stored in a relational database. It uses statements like SELECT, INSERT, UPDATE, and DELETE to query, add, modify, or remove rows in tables. For example, a statement can retrieve specific columns from a table or update certain records. A compiled program runs general code on a computer, a shell script automates operating-system tasks, and XML is a data format, not a command language for databases. So an SQL statement is the appropriate tool to work with relational data.

7. Which formal grammar type has production rules whose left-hand side is a single non-terminal symbol?

A. Context-Free Grammar

B. Regular Grammar

C. Context-Sensitive Grammar

D. Unrestricted Grammar

In grammars, having a single non-terminal on the left side of every production defines a context-free grammar. In this form, rules look like A -> w, where A is a non-terminal and w can be any string of terminals and non-terminals. This setup lets you rewrite one non-terminal at a time and build up complex, recursive structures, which is exactly what context-free grammars are designed to express. Regular grammars are actually a narrower subset that keeps the left side as a single non-terminal but imposes a stricter shape on the right side (typically a terminal with at most one non-terminal, or just a terminal). Context-sensitive grammars relax the left-hand side, allowing longer strings of symbols, and unrestricted grammars remove such restrictions altogether. So the rule form described corresponds to context-free grammars.

8. The smallest unit of data that can be transferred between the cache and main memory is called.

A. Cache Block Size

B. Word Size

C. Memory Page

D. Cache Line Size

Data moves between cache and main memory in fixed-size chunks. This smallest transferable chunk is what we call a cache line, often referred to as a cache block as well. The size of that chunk is the cache block size (or cache line size). In this context, the term that names the unit being transferred is the cache block, so describing it as the cache block size fits what the question asks. The other options don't describe the transferable unit: word size is the processor's data width, memory page relates to virtual memory management, and cache line size is about the amount of data in the line rather than naming the unit itself.

9. Bandwidth is to the theoretical maximum data transfer rate as throughput is to the

A. Actual achieved data rate

B. Latency

C. Bandwidth

D. Error rate

The key idea is the distinction between maximum capacity and actual performance. Bandwidth is the theoretical maximum data rate a channel can carry, assuming ideal conditions. Throughput is the actual rate at which useful data is successfully delivered over time, taking into account overhead, retransmissions, and network congestion. So throughput represents the real, achieved data rate, which is typically lower than the theoretical bandwidth. In perfect conditions throughput would approach bandwidth, but in real networks the gap exists due to overhead and errors. Latency relates to delay, not rate; bandwidth is the ceiling, not the actual rate; error rate measures mistakes, not how much data gets through.

10. What operation yields the remainder when one integer is divided by another?

A. Modulus

B. Division

C. Quotient

D. Remainder

Modulus (modulo) is the operation that gives the remainder when dividing one integer by another. When you divide a by b, you can write a = b · q + r, where q is the quotient and r is the remainder with 0 ≤ r < |b|. The remainder is exactly a mod b, the modulus. Division refers to performing the split and yields both q and r, but the operation that directly yields the remainder is modulus. The remainder alone is the value r, not the operation itself.

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://gategenaptitudecssol.examzify.com

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