Certainly! I'll provide answers to the multiple-choice questions, and for the open-ended questions, I'll provide concise answers. Here's the formatted response in Markdown:

Multiple Choice Questions and Answers

1. Which of the following is a non-functional requirement?

    1. A) The system shall display the user's profile after login
    2. B) The system shall process 10,000 transactions per second
    3. C) The system shall allow users to reset their password
    4. D) The system shall support user authentication

    - **Answer: B) The system shall process 10,000 transactions per second**

2. Which of the following is NOT an advantage of Agile methodology?

    1. A) Increased flexibility
    2. B) Faster delivery of working software
    3. C) Extensive upfront documentation
    4. D) Better responsiveness to change

    - **Answer: C) Extensive upfront documentation**

3. In software testing, unit testing is concerned with:

    1. A) Testing the entire system
    2. B) Testing individual modules or components
    3. C) Testing the system's integration with external systems
    4. D) Testing the system's performance under load

    - **Answer: B) Testing individual modules or components**

4. Which software development model is also called the "linear sequential model"?

    1. A) Spiral Model
    2. B) Waterfall Model
    3. C) Agile Model
    4. D) V-Model

    - **Answer: B) Waterfall Model**

5. Which of the following is an example of white-box testing?

    1. A) Regression testing
    2. B) Equivalence partitioning
    3. C) Code coverage analysis

4. D) Usability testing

    - **Answer: C) Code coverage analysis**

Open-Ended Questions and Answers

- **What is the difference between functional and non-functional requirements?**
  Functional requirements specify what the system should do, such as specific functionalities or features. Non-functional requirements specify how the system should behave, such as performance, usability, reliability, etc.

- **How does the waterfall model differ from the agile model?**
  The waterfall model is a linear and sequential approach where each phase must be completed before the next begins. The agile model is iterative and incremental, allowing for flexibility and changes throughout the development process.

- **What is the purpose of software testing, and what are its main levels?**
  The purpose of software testing is to ensure the software is free of defects, meets requirements, and is reliable. Main levels include unit testing, integration testing, system testing, and acceptance testing.

- **What are the characteristics of good software?**
  Good software should be reliable, efficient, maintainable, scalable, and user-friendly.

- **How do version control systems help in software development?**
  Version control systems help manage changes to source code, facilitate collaboration among developers, and maintain a history of changes.

- **What is the role of a software architect in a development team?**
  A software architect designs the high-level structure of a software system, making crucial technical decisions and ensuring the architecture aligns with business goals.

- **What is the difference between verification and validation?**
  Verification ensures the product is built correctly according to specifications, while validation ensures the product meets the user's needs and requirements.

- **What are software design patterns, and why are they important?**
  Design patterns are proven solutions to common design problems. They provide a shared language for developers, improve code maintainability, and enhance software design quality.

- **What are the main challenges of software maintenance?**
  Challenges include dealing with legacy code, managing technical debt, and ensuring compatibility with new technologies.

- **How does continuous integration (CI) improve software quality?**
  CI improves software quality by automating testing and integration processes, allowing for early detection of defects and faster feedback.

- **What is technical debt, and how can it affect a project?**
  Technical debt refers to the implied cost of additional work caused by choosing an easy solution now instead of a better approach that would take longer. It can lead to increased maintenance costs and reduced system performance.

- **What are the advantages of using microservices over monolithic architecture?**
  Advantages include improved scalability, easier maintenance, and the ability to deploy and update services independently.

- **What is the purpose of requirement elicitation?**
  Requirement elicitation aims to gather detailed and accurate requirements from stakeholders to ensure the system meets their needs.

- **How does user-centered design influence software development?**
  User-centered design focuses on the user's needs and experiences,