Answer Key: JS qb

Section 1 (5 marks per question)

Q1. Analyze the advantages and disadvantages of cloud computing as outlined in the text.

Keywords:

on-demand, scalability, security risks, network connectivity

Main Points:

• Advantages: On-demand computing resources, scalability, reduced hardware costs.
• Disadvantages: Potential security risks, dependency on network connectivity, limited control over resources.

Detailed Explanation:

Cloud computing offers benefits such as flexibility and cost savings, but also raises concerns about security and control.

Examples:

• Amazon EC2 provides on-demand compute resources.

Q2. Explain how Google and Facebook utilize cloud-based resources for machine learning applications.

Keywords:

machine learning, Google Now, image recognition

Main Points:

• Google uses cloud-based resources for machine learning algorithms to enhance services like Google Now.
• Facebook uses cloud resources for image recognition and social network analysis to enhance user experiences.

Detailed Explanation:

Both Google and Facebook leverage cloud computing for data processing and personalized services.

Examples:

• Google Now provides proactive recommendations based on user context.

Q3. Describe the key aspects of the cloud-computing framework presented in the text.

Keywords:

scalability, privacy protection, smart mobile devices

Main Points:

• Improves scalability by utilizing device and cloud resources.
• Enhances privacy protection without compromising application quality.
• Leverages smart mobile device capabilities.

Detailed Explanation:

The framework aims to optimize performance and security for personalized intelligence applications.

Examples:

• Device resources can supplement cloud resources for improved performance and battery efficiency.

Q4. Discuss the benefits of utilizing powerful smart mobile devices in the cloud-computing framework.

Keywords:

processing capacity, battery life, network connectivity

Main Points:

• Smartphones offer significant processing power for various computing tasks.
• Device usage can be limited by battery life and network connectivity.

Detailed Explanation:

Smart devices provide computational capabilities but have inherent limitations that can be addressed through cloud collaboration.

Examples:

• Smartphones can process voice queries locally, saving battery life.

Q5. Explain the role of the runtime adaptation engine in the cloud-computing framework.

Keywords:

query processing, device optimization, accuracy

Main Points:

• Processes queries on smart mobile devices to minimize data transfer and battery consumption.
• Balances between device resources and cloud-based processing for optimal performance and accuracy.

Detailed Explanation:

The runtime adaptation engine dynamically adjusts query processing based on device capabilities and cloud availability.

Examples:

• If the lightweight mobile voice query engine provides a poor result, the query may be sent to the cloud for higher accuracy.

Q6. Describe the purpose of the privacy-protection solution in the cloud-computing framework.

Keywords:

privacy concerns, security solutions, personalized intelligence

Main Points:

• Addresses privacy concerns related to user data and personalized intelligence applications.
• Implements security solutions that protect privacy without compromising application functionality.

Detailed Explanation:

The privacy-protection solution ensures that user data is protected while still enabling the benefits of personalized intelligence applications.

Examples:

• The framework protects user data during data processing and sharing to prevent privacy breaches.

Q7. Analyze the effectiveness of the proposed cloud-computing framework in enhancing both scalability and privacy protection.

Keywords:

scalability, privacy protection, application quality

Main Points:

• Leverages device resources to increase scalability.
• Implements security solutions to safeguard privacy while maintaining application quality.

Detailed Explanation:

The framework effectively addresses both scalability and privacy concerns by optimizing resource utilization and implementing robust security measures.

Examples:

• The framework allows for seamless scaling of applications while protecting user data during processing.

Q8. Identify the key applications that benefit from the proposed cloud-computing framework and explain why.

Keywords:

personalized intelligence, scalability, privacy protection

Main Points:

• Personalized intelligence applications that require scalability and privacy protection.

• The framework provides enhanced scalability and privacy protection, enabling these applications to operate efficiently and securely.

Detailed Explanation:

The framework is particularly suitable for applications that handle sensitive user data and demand high performance.

Examples:

• Google Now is an example of a personalized intelligence application that benefits from the framework's capabilities.

Q9. Highlight the key challenges and trade-offs involved in implementing the proposed cloud-computing framework.

Keywords:

device/cloud collaboration, privacy protection, application design

Main Points:

• Ensuring seamless device/cloud collaboration.
• Balancing privacy protection with application performance.
• The framework may require modifications to application design to accommodate the collaboration model.

Detailed Explanation:

Implementing the framework involves technical challenges and requires careful consideration of trade-offs between privacy, performance, and application architecture.

Examples:

• The framework's design should optimize data transfer between devices and cloud while preserving privacy and maintaining acceptable response times.

Q10. Evaluate the potential impact of the proposed cloud-computing framework on the future of personalized intelligence applications.

Keywords:

personalized intelligence, scalability, privacy protection

Main Points:

• Increased scalability and privacy will enable more sophisticated personalized intelligence applications.
• Potential for increased user adoption of personalized intelligence applications due to improved privacy protection.

Detailed Explanation:

The framework has the potential to revolutionize personalized intelligence applications, enhancing their capabilities and fostering greater user trust.

Examples:

• The framework could lead to the development of new applications that were previously infeasible due to scalability or privacy concerns.