

Time: 1.5 hrs

Date: 27 / 11 / 2024

**Q.1 Fill-in-the-blank (Any 5)**

1. The user can revoke app permissions from the device settings under the \_\_\_\_\_ section.
2. \_\_\_\_\_ method is called to execute a SQL query that retrieves data from a SQLite database.
3. \_\_\_\_\_ class is used to manage database creation and version management in Android.
4. The method \_\_\_\_\_ is used to handle the result of a permission request in an Activity.
5. To retrieve data in a structured way, SQLite results are often stored in a \_\_\_\_\_ object, which can be easily iterated through.
6. The SQLite method insert() returns \_\_\_\_\_.

**Q.2 Explain in detail (Any 5)**

1. What is the role of the SQLiteOpenHelper class in Android? Describe its key methods and how they facilitate database management.
2. Discuss the best practices for handling user interactions with Activities and Fragments while performing database operations. How can developers ensure a smooth user experience without blocking the UI thread?
3. Explain the role of the Adapter in a RecyclerView. How does it facilitate the connection between the data source (like an SQLite database) and the RecyclerView?
4. Describe the function of a ViewHolder in the context of RecyclerView. Why is using a ViewHolder pattern important for performance?
5. Discuss how Fragments can utilize RecyclerView to display data. What considerations should be taken when managing data updates and notifying the Adapter about changes?
6. How do you implement item click functionality in a RecyclerView? Explain how using an interface can help facilitate communication between the RecyclerView Adapter and the Activity or Fragment.

[15]

[5]

**Department of Computer Science**  
**Gujarat University**

**MCA**

**Semester III**

**Subject: Computer Vision**

**Total Marks: 25**

**Time: 1.5 hours**

**Q1.** Define segmentation . What are the broad categories of segmentation? Explain various thresholding approaches in detail [10]

**Q2.** Define edge . what are different types of edges? Write masks for gradient and Laplacian operators  
OR

**Q3.** What are morphological operators? what is a structuring element. What are different types of it What do u mean by hit,miss and fit ? [07]

With respect to morphological operators, explain dilation erosion opening closing [08]

**DEPARTMENT OF COMPUTER SCIENCE  
GUARAT UNIVERSITY**

**SUBJECT: CLOUD COMPUTING**

**MCA SEMESTER - 3**

**SESSIONAL - 2**

**Max. Marks: 40**

**Time: 2 Hours**

**Q1**  
Suppose you are asked to develop a dynamic website on Cloud, what essential features of cloud can be applied? Discuss any 5 [10 marks]  
feature that you will use to develop a website with brief justification for each feature.

**Q2**

Answer any 4 in detail:

1. Discuss Portability and Interoperability Scenarios for Cloud.
2. Differentiate between Internal Audit and External Audit.
3. Write a short note on IAM.
4. Discuss various algorithms/approaches for dynamic load balancing.
5. Write a short note on Jericho Forum Cloud Cube Model.

**[10 marks]**

**Q3**

Answer any 5 in short:

1. What is Single Sign On – Discuss briefly?
2. What do you understand by Portability in Cloud?
3. What is the necessity of Audit in cloud environment?
4. Give an example of Access Control List (ACL).
5. What is capacity planning in cloud?
6. Give 2 differences between vertical scaling and horizontal scaling.

**[10 marks]**

Subject: Object Oriented Software Engineering  
Time: 1 hr & 30 mins

Date: 28 / 11 / 2024  
Max. Marks: 40

Q-1

Answer the following questions

20

- Explain the purpose of interaction diagrams in software design and provide an example scenario where they are particularly useful.
- Create a sequence diagram for a user logging into an online banking system. Include actors, lifelines, messages, and activation bars.
- Discuss the importance of class diagrams in understanding the static structure of a system. Provide examples.
- Describe the key elements of Software Quality Assurance (SQA), including SQA tasks, goals, and metrics. Discuss the role of SQA in ensuring software quality and provide examples of SQA activities.

Q-2

Answer the following questions (Any two)

10

- Compare and contrast sequence diagrams and collaboration diagrams. When would you use each type?
- What is an RMM (Risk Management, Monitoring, and Mitigation) plan? Discuss its key components and how it helps in managing risks throughout the project lifecycle.
- Discuss the importance of object-oriented metrics such as coupling, cohesion, inheritance, and polymorphism. Provide examples of how these metrics can be used to assess the quality of object-oriented software design.

Q-3

Answer the following questions

10

- Discuss the client-server architecture genre. What are its key characteristics, and what are its advantages and disadvantages?
- Describe the principles of Statistical Software Quality Assurance (SSQA) and explain how statistical methods such as Statistical Process Control (SPC) and control charts are used to monitor and improve software quality.

Date: 21<sup>st</sup> November 2024

Time: 9:30 - 11:00 am

Max. Marks: 30

**Q1. Answer the following questions [20]**

- a) Compare and contrast Recurrent Neural Networks (RNNs) and Recursive Neural Networks (RNNs). Highlight the differences in their architectures and applications.

**OR**  
a) Explain the challenges in optimization for deep model training. Discuss the role of adaptive learning rates and second-order methods in overcoming these challenges.

- b) Draw the structure of LSTM. Explain the flow and generate the equations for the forget, input, and output gates in an LSTM.

**OR**

- Q2. Answer the following [05]**

1. How does Bayesian inference relate to regularization in deep learning?

- A) It assumes fixed parameter values during training.
- B) It interprets regularization as adding noise to weights.
- C) It views regularization as incorporating prior beliefs about parameter distributions.
- D) It eliminates the need for backpropagation.

2. What is a key difference between auto-regressive networks and recursive neural networks?

- A) Auto-regressive networks process hierarchical data, while recursive networks handle sequential data.
- B) Auto-regressive networks predict future values based on past data, while recursive networks operate on tree-like structures.
- C) Recursive networks use a fixed context window, while auto-regressive networks do not.
- D) Recursive networks rely on parameter sharing, while auto-regressive networks do not.

3. Which of the following regularization techniques specifically addresses under-constrained problems in deep learning?

- A) Dropout
- B) Batch Normalization
- C) ReLU activation
- D) Softmax

4. What is the primary difference between Artificial Neural Networks and Recurrent Neural Networks?

- A) ANNs are designed for sequential data, while RNNs are for static data.
- B) ANNs have feedback loops, while RNNs do not.
- C) RNNs have feedback loops to handle sequential data, while ANNs process independent inputs.
- D) RNNs use only feedforward connections, while ANNs use recurrent connections.

5. What is the primary reason for the introduction of Gated Recurrent Units (GRU's)?

- A) To replace LSTMs entirely
- B) To simplify the architecture of LSTMs while retaining similar functionality
- C) To handle static data better than ANNs
- D) To solve optimization problems in feedforward neural networks

[05]

Q3. State whether the following are true or false

[05]

- ✗ 1. Recurrent Neural Networks (RNNs) and Recursive Neural Networks (RNNs) have identical architectures and are used interchangeably.
- ✗ 2. Regularization techniques like dropout help mitigate under-constrained problems in deep learning by reducing overfitting.
- ✓ 3. Adaptive learning rates improve optimization in deep models by using the same step size for all parameters throughout training.
- ✗ 4. The natural gradient method always outperforms traditional gradient descent in training deep models.
- ✗ 5. L1 regularization encourages sparsity in the model by penalizing large parameter values.

**Department of Computer Science  
Gujarat University**

**M.C.A. – III (Computer Science)  
Sub: Enterprise Java Technologies - Theory**

Date : 25/11/2024

Marks : 30

**Q-1: Write answers for the following questions.**

1. Explain JDBC type 4 driver. [3M]

2. Write down the advantages and disadvantages of JDBC. [3M]

3. Develop a program using JDBC to display student's record (Enroll no, Stud\_name, Stud\_address, Stud\_mob\_no and Stud\_Email\_ID) from table Student\_Records [4M]

**Q-2: Write answers for the following questions.**

A. List various features of Servlet. [3M]

[3M]

2. Explain ServletConfig class with suitable example. [3M]

3. Develop a simple program, when user select the subject code, [4M]  
name of the subject will be displayed using servlet and mysql database

**Q-3: Write answers for the following questions.**

1. Write short note on JSP scripting elements. [2M]

2. Compare JSP and Servlet. [2M]

3. Develop a JSP program to display the grade of a student by accepting the marks of five [4M] subjects