CHOICE BASED CREDIT SYSTEM
MCA SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2023
Python Programming

Duration:3 Hours

Max Marks:70

Part A

Answer any THREE of the following :   3×4= 12

1. What is the purpose of with statement when working with text files in Python?

2. What is the difference between the sort() and sorted() methods for sorting elements of a list in Python?

3. Explain functions defined in built-in modules in Python with an example for each.

4. Explain in detail about Python Database Adapters.

Part B

Answer any FOUR of the following :   4×7= 28

5. List and explain the various assignment operators used in Python in detail. Provide a Python program that takes two numbers as user input and demonstrates how to swap these numbers both using a third variable and without using a third variable.

6. Explain the similarities between tuples and strings in Python with examples.

7. Explain the concept of key-value pairs in a dictionary and how does del operation work on dictionaries in Python.

8. Explain with an example how custom exceptions are created in Python.

9. Explain CGI architecture in the context of web programming. Why is it important for creating dynamic web content?

Part C

Answer any THREE of the following :   3×10= 30

10. How do you implement the concept of polymorphism in Python? Explain with examples the types of polymorphism that could be implemented in Python.

11. What are the various control statements in Python and explain with examples why are they important in programming?

12. What defines a 'sequence' in Python? Compare the different types of sequences and how they differ from other data types in Python?

13. What does the term 'middleware' mean in the context of web frameworks? How does it contribute to the security enhancement of web application?

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CHOICE BASED CREDIT SYSTEM
MCA SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2023
Data Warehousing and Data Mining

Duration:3 Hours   Max Marks:70

Part A

Answer any THREE of the following :   3×4= 12

1. Determine the cosine similarity for two frequency term vectors given by X= (5,0,3,0,2,0,0,2,0,0) Y=(3,0,2,0,1,1,0,1,0,1). Are the documents similar?

2. Explain the concept of binning with examples of your own.

3. Explain the limitations of Apriori algorithm in association rule mining.

4. How do you convert decision trees to rule based classification? Explain with an example.

Part B

Answer any FOUR of the following :   4×7= 28

5. Explain the various statistical measures could help in describing data.

6. Explain the various kinds of data that could be mined.

7. Explain the various OLAP operations that could be applied on a data cube.

8. Explain the concept of constraint based frequent pattern mining.

9. Explain the rule based classification with examples.

Part C

Answer any THREE of the following :   3×10= 30

10. Given the minimum support count is 2, generate all the frequent itemsets using Apriori Algorithm.

TID	ITEMSETS
T1	A, B
T2	B, D
T3	B, C
T4	A, B, D
T5	A, C
T6	B, C
T7	A, C
T8	A, B, C, E
T9	A, B, C

11. Explain the various data mining functionalities.

12. Explain the data warehouse architecture with a neat diagram.

13. Explain the agglomerative and divisive approaches used in clustering.

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CHOICE BASED CREDIT SYSTEM

MCA SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2023

Cloud Computing

Duration:3 Hours

Max Marks:70

Part A

Answer any THREE of the following :   3×4= 12

1. Why do we need performance metrics? Explain the various dimensions of scalability.

2. What do you mean by failure recovery? Explain the two types of recovery techniques.

3. Explain how load balancing works within a virtual cluster.

4. Discuss three key benefits that containers offer for application deployment in the cloud.

Part B

I. Answer any FOUR of the following :   4×7= 28

5. What is GPU computing and explain how it differs from CPU.

6. Differentiate between centralized computing and distributed computing.

7. Explain Single System Image (SSI) in detail.

8. Describe the role of hypervisors in virtualization. Differentiate between Type 1 and Type 2 hypervisors with examples.

9. Explain the key features of Google App Engine and Microsoft Azure. Explain their advantages and disadvantages.

Part C

Answer any THREE of the following :   3×10= 30

10. What do you mean by public cloud computing? Explain the characteristics of public cloud computing with example.

11. Illustrate how Gustafson's law can be used to analyze the scalability and performance metrics in computer architecture with example.

12. What do you mean by computer cluster? Explain the design issues of computing cluster.

13. Compare and contrast between cloud computing and edge computing.

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CHOICE BASED CREDIT SYSTEM

MCA SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2023

Full Stack Web Development

Duration:3 Hours   **Max Marks:70**

Part A

Answer any THREE of the following :   3×4= 12

1. Explain thead-dark, table-striped, table-bordered, and table-responsive bootstrap classes.

2. Explain any four features of Document Object Model.

3. Explain the role of event emitters in Node.js applications.

4. Discuss the significance of primary key, auto-increment column properties with example.

Part B

Answer any FOUR of the following :   4×7= 28

5. What is JSON? Why is it used in Ajax-based applications.

6. Describe the steps to implement pagination using Bootstrap components. Explain the purpose of each Bootstrap class used in the example.

7. Explain for-of loop of JavaScript with syntax and example.

8. Explain any seven core features of AngularJS.

9. Compare indexed arrays and associative arrays in PHP. Illustrate how each type of array can be declared and manipulated with examples.

Part C

Answer any THREE of the following :   3×10= 30

10. What are controllers in AngularJS? Explain the role of controllers in AngularJS with example.

11. What are d-* classes? Explain any four d-* classes in detail with examples.

12. Write a HTML program to filter the even numbers from a list of numbers using jQuery filter() method

13. Explain the basic structure of a try-catch block in PHP. Justify the significance of exception handling with any two real-world scenarios.

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CHOICE BASED CREDIT SYSTEM

MCA SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2023

Mobile Application Develolpment

Duration:3 Hours   **Max Marks:70**

Part A

Answer any THREE of the following :   **3×4= 12**

1. Explain themes.xml file in detail.

2. Explain the attribute of layout_weight in LinearLayout and how it is used to distribute available space among child views?

3. Explain in detail any four best practices for effective data management and storage in Android applications.

4. Explain the process of making and receiving phone calls programmatically in Android.

Part B

Answer any FOUR of the following :   **4×7= 28**

5. List down the differences between an explicit Intent and an implicit Intent. Write down Kotlin snippet codes where each type of Intent can be used .

6. Explain any seven features of Android Operating System in detail.

7. Explain Started Service in Android in detail.

8. Describe the steps involved in setting up the development environment for Cordova projects.

9. Write and explain the queries to interact with SQLite databases in Android for CRUD operations.

Part C

Answer any THREE of the following :   **3×10= 30**

10. Outline the purpose and capabilities of the iOS SDK and provide examples of SDK components that aid in various aspects of iOS application development.

11. Explain in detail about the various Android libraries.

12. Explain the building blocks of Android in detail.

13. Explain the concept of threads, the AsyncTask class, Handler and Runnable for managing multithreaded operations in Android applications.

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CHOICE BASED CREDIT SYSTEM

MCA SECOND SEMESTER DEGREE EXAMINATION OCTOBER 2023

Internet of Things

Duration:3 Hours

Max Marks:70

Part A

Answer any THREE of the following : 3×4= 12

1. Write a short note on home automation in IoT.

2. Explain SNMP with a neat diagram.

3. Explain any four Linux commands along with purpose and example.

4. List and explain the various Raspberry PI status LEDs

Part B

Answer any FOUR of the following : 4×7= 28

5. Differentiate the REST based API and Web Socket based API in IoT.

6. Explain how IoT could be used in Smart Grids.

7. Explain the layers of SDN with a neat diagram.

8. Explain the Domain model specification step in IoT design methodology.

9. Explain about Amazon Dynamo DB.

Part C

Answer any THREE of the following : 3×10= 30

10. Explain the various Python data types and data structures used to build a IoT applications.

11. Explain the IoT protocol stack with a neat diagram.

12. Explain in detail the differences between M2M and IoT

13. Explain the various Amazon Web Services used for IoT.

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