

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester B.Sc Computer Science Degree Examination, April 2025

BCS4B06 – Fundamentals of Database Management Systems &amp; RDBMS

(2022 Admission onwards)

Time: 2 hours

Max. Marks : 60

**PART A****Answer all questions**

1. Discuss the term Data Independence and its importance in Database Systems.
2. Write a note on Database Instance. Give an example.
3. What is a Data Model? Why is it required in data representation?
4. Define Cardinality with suitable examples.
5. Expand the concept of Natural Join with a suitable example.
6. Why do anomalies occur in database management systems?
7. Define the concept of Transitive Dependency in 3NF with a suitable example.
8. What is Data Manipulation Language in SQL? Give a suitable example.
9. Discuss the term Pattern Matching with a suitable example.
10. How does the HAVING clause differ from WHERE clause? Give suitable examples.
11. Write a note on Transactions in database management systems.
12. Briefly describe the concept of Dirty Read Problem.

**(12 x 2 = 24 , Maximum ceiling 20 marks)****PART-B****Answer all questions**

13. Recall the steps involved in the process of Database Design.
14. Illustrate various types of Data Models with suitable examples.
15. Differentiate Domain Calculus and Relational Calculus. Give examples.
16. Elaborate on Attributes, Domains, and Relation with suitable examples.
17. Elucidate Multivalued Dependencies and Join Dependencies with examples.
18. Illustrate Views and Materialized views. Discuss how a view can be modified.
19. What are Dead Locks in DBMS? How it can be prevented?

**(7x5 = 35 , Maximum ceiling 30 marks)**

**PART-C**  
**Answer any one question**

20. a) Write a note on Free and Bound Variables in Relational Calculus. (3 marks)  
b) Discuss the concept of Cross Join with a suitable example. (3 marks)  
c) What are Exclusive Locks? What is the purpose of this in DBMS? (4 marks)
21. a) Discuss Insert Anomalies and Update anomalies. (3 marks)  
b) Differentiate DELETE, DROP, and TRUNCATE with suitable examples (5 marks)  
c) Discuss ROLLBACK and COMMIT commands with its uses. (2marks)

**(1 x10 = 10 marks)**

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(Pages : 2)

Reg. No:.....

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FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester B.Sc Computer Science Degree Examination, April 2025

BCS4A13 – Object Oriented Concepts through Python

(2022 Admission onwards)

Time: 2 ½ hours

Max. Marks : 80

Note: You can answer all the questions in Sections A&B. But there shall be Ceiling in these sections

**PART -A**

**Answer all questions.**

**Each question carries Two mark.**

**Ceiling -25 Marks**

1. Define the term polymorphism.
2. List any two advantages of OOP.
3. Explain the use of is operator in Python.
4. Explain about comment statements in Python.
5. Write syntax of elif statement in Python.
6. What is the difference between break and continue statement in Python.
7. How to return a value from a function in Python.
8. Explain any two built in functions in random package of Python?
9. Write syntax to define a user defined class in Python.
10. Write a python program to reverse a string using slicing operator.
11. What do you mean by encapsulation?
12. Write a statement to accept user input in Python?
13. Write a Python program to check a string is palindrome or not?
14. What is the purpose of keyword parameter?
15. Write statements to create a list and access last element in it.

**P A R T -B**  
**Answer all questions.**  
**Each question carries Five mark.**  
**Ceiling -35 Marks**

16. Write any five features of OOP.
17. Explain the concept of operator precedence in Python.
18. Write short note on membership operators in Python.
19. Explain the need of `pass` statement in Python.
20. Write python program to create a dictionary and perform operations like displaying dictionary, displaying keys and displaying value of a particular key.
21. Explain how to define a function in Python.
22. Compare set and tuple in python.
23. Explain the terms object and class.

**P A R T -C**  
**Answer any two questions.**  
**Each question carries 10 mark.**

24. Explain various looping statements in Python with suitable examples.
25. Explain in detail lists in python.
26. Explain four parameter passing mechanism in Python with suitable examples.
27. Explain various features of Python programming language.

**2 ×10=20 marks**

FAROOK COLLEGE (AUTONOMOUS), KOZHIKODE

Fourth Semester B.Sc Computer Science Degree Examination, April 2025

BCS4A14 – Principles of Software Engineering

(2022 Admission onwards)

Time: 2 ½ hours

Max. Marks : 80

**PART-A****Answer all questions.****Each question carries Two marks.****Ceiling -25 Marks**

1. What are the key characteristics of a modern software?
2. Expand Linear Sequential Model. Give an example.
3. Differentiate RAD Model and Waterfall model.
4. “Software Requirement Specification provides a reference for validation of the final product”, justify the statement.
5. Write a note on Non-functional Requirements.
6. Briefly discuss the process of Requirement Specification.
7. Differentiate Diversification and Convergence in Software Design practice.
8. Define the concept of Functional Independence.
9. List out the important elements of Interface Design.
10. Expand the concept of Code Review.
11. Write a note on Black Box Testing.
12. Explain the Memory Leaks situation in coding.
13. What are Version Control Systems? Why is it important?
14. Discuss the concept of Content Management in Software Configuration management.
15. Describe the term Impact Analysis in change control management.

**PART -B****Answer all questions.****Each question carries Five marks.****Ceiling -35 Marks**

16. Illustrate Component Based Development Model with an example.
17. Recall the structure of Software Requirement Specification (SRS).

18. Explain Cohesion. List out various types of Cohesion.
19. Elaborate on Object Oriented Design Process.
20. Illustrate the Equivalence Portioning and Boundary Value Analysis testing methods.
21. Differentiate Static and Dynamic Testing processes.
22. Illustrate the layers in Software Configuration Management Process.
23. Elaborate on the SCRUM framework with a neat diagram.

### **PART - C**

**Answer any *two* questions.  
Each question carries Ten marks.**

24. a) Explain iterative Development Model. (3)  
b) Write a note on Feasibility Study. (4)  
c) Explain Pair-wise Testing. (3)
25. a) "If a program runs, it must be correct", Justify the myth. (3)  
b) Define Requirement Validation Process. (4)  
c) Enumerate any three testing strategies. (3)
26. a) Explain the Agile Process Model in Software Development. (3)  
b) Describe the Requirement Management Process. (3)  
c) Discuss Software Reengineering Process in Software Engineering. (4)
27. a) Explain condition testing in white box testing. (3)  
b) Elaborate on Use-Case Testing. (4)  
c) Discuss the major roles in SCRUM Framework. (3)