

MCA 3RD SEM ASSIGNMENT

OPERATING SYSTEM

PART-A

Q 1- What is a deadlock ? Explain the necessary and sufficient conditions for deadlock occurrence. Also explain how deadlock can be prevented.

Q 2- What is mutual exclusion ? Write and explain Dekker's solution for mutual exclusion.

Q 3- Explain with a diagram, how paging supports the virtual memory. Also explain how a logical address is translated into a physical address in paging.

Q 4- Write and explain Lamport's Bakery Algorithm with an example in a distributed OS.

Q 5- Differentiate between a process and a - thread. Draw and explain the five states process model.

PART-B

Q 1- discuss various design issues involved in a distributed system.

Q 2- With the help of a neat diagram, describe Crossbar and Hypercube multiprocessor interconnection architecture.

DESIGN AND ANALYSIS OF ALGORITHM

PART-A

Q1- Differentiate between P and NP class of problems with example of each .

Q2- By using Principle of Mathematical Induction, show that $n^3 - n$, is divisible by 6, where n is a non-negative integer.

Q3- Explain the "Principle of Optimality" in dynamic programming with suitable example.

Q4- Compute x^{29} by using divide and conquer technique.

Q5- Writes Euclid's algorithm to find the GCD of two natural numbers m and n.

PART-B

Q1- Write short notes on any three of the following :

- (i) Kleene Closure
- (ii) Push-down Automata (PDA)
- (iii) Chomsky's Classification of Grammar
- (iv) Amortize Analysis

DATABASE MANAGEMENT SYSTEM

PART-A

- Q 1- Explain the term data replication and data fragmentation with suitable example.
- Q 2- What are integrity constraints ? Explain the various types of integrity constraints with suitable examples.
- Q3- How do you implement a hierarchical data model ? Explain through an illustration.
- Q4- Define Data Manipulation Language (DML) of SQL. List and explain various DML commands.
- Q5- How do B-tree indexes differ from Binary search tree indexes ?

PART-B

Q1- What do you understand by the term Query Optimization ? Discuss the role of relational algebra in Query Optimization. List the operators used in relational algebra and discuss the operation of each, with suitable example.

Q2- What is the need of indexes in DBMS ? Compare primary; secondary and clustering indexes. Which of these indexes are dense ? Give steps to perform implementation of clustering indexes.

INTERNET AND JAVA PROGRAMMING

PART -A

Q 1- What do you understand by 'this' keyword ? Explain its usage with an example.

Q2- What is an event in Java ? Describe different components of an event.

Q3- What is an interface ? Discuss the utility of -interface with suitable example.

Q4- What are cookies ? Discuss the role of cookies in session tracking.

Q5- Write a Java program, to find factorial of a given number.

PART-B

Q1- What are class and objects ? Explain how an object is created in Java ? Also explain the role of constructor in Java using Java code.

Q2- What is Polymorphism ? Explain the difference between method overloading and method overriding with the help of example.

COMPUTER BASED OPTIMIZATION TECHNIQUE

PART -A

Q 1- Explain the role of surplus variables in the simplex method.

Q2- Write a short note on criterion of realism.

Q3- Distinguish between pure and mixed integer programming problems.

Q4- Discuss scientific methods in OR.

Q5- What is cycling? State the rules to avoid cycling.

PART-B

Q 1- Explain the Hungarian method for solution of the assignment problems.

Q2- Explain Decision-tree analysis. What is node in a decision tree?