Enroll. No._____

MARWADI UNIVERSITY

Faculty of Computer Application

M.C.A.

SEM: 1 **MU FINAL EXAM** **JAN: 2024**

Subject: - (Data Structure) (05MC0101) **Date: - 16-01-2024**

Total Marks:-100 **Time: - 03 Hours**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Do not write/sign/indication/tick mark anything other than Enroll No. at a specific place on the question paper.**

Question: 1.

(a) Answer the following MCQs. [10]

1. The path is a _____ if it begins and ends at the same vertex.
   a) wheel b) circuit
   c) length d) none of above

2. A graph in which every edge is undirected is called _____.
   a) directed graph b) undirected graph
   c) both a and b d) none of above

3. If START=NULL in linked list then we need to write _____ Message.
   a) Overflow b) Underflow
   c) both d) none of above

4. The elements in a queue are added at one end called _____.
   a) front b) rear
   c) near d) none of above

5. Array is _____ data type.
   a) user defined b) primary
   c) derived d) all of above

6. In _____ data structure data items are not in sequence.
   a) non linear b) linear
   c) non-homogeneous d) all of above

7. _____ is any node with an out-degree of zero.
   a) root b) internal node
   c) parent d) leaf

8. In _____ linked list it contains three parts data , next and previous.
   a) singly b) doubly
   c) circular d) none of above

9. Which of the following method is used for sorting in merge sort?
   a) partitioning c) exchanging
   b) merging d) selection

10. _____ operation returns the value of the topmost element of the stack.

a) push b) pop
c) peep d) update

(a) Answer the following definitions. [10]
1. Define Data Structure
2. Define Time Complexity
3. Define Queue
4. Provide Full form: LIFO
5. Define Linked List
6. What is use of START pointer variable in linked list?
7. Define: Leaf Node
8. Define: Full Binary Tree
9. Define: Mixed Graph
10. Define: Linear Search

Question: 2.

(a) Explain types of data structures. [08]

(b) Describe Time Complexity and space complexity with best case, average case and worst case. [08]

OR

(b) Discuss Top down and Bottom up approach and also provide difference. [08]

Question: 3.

(a) Define Stack. Write an algorithm for push and pop operation. [08]

(b) List Steps of Tower of Hanoi for moving 3 Discs with diagram. [04]

(c) Convert following infix notation to prefix notation. [04]
(A*B+C/(D-E))

OR

(a) Describe circular queue with insert and delete algorithm. [08]

(b) Describe application of queue. [04]

(c) Write algorithm of delete operation of linear queue. [04]

Question: 4.

(a) Write an algorithm of singly Linked List with following operation. [08]
1. Insert at beginning
2. Delete first

(b) Write an algorithm of doubly Linked List with following operation. [08]
1. Insert beginning
2. Delete end

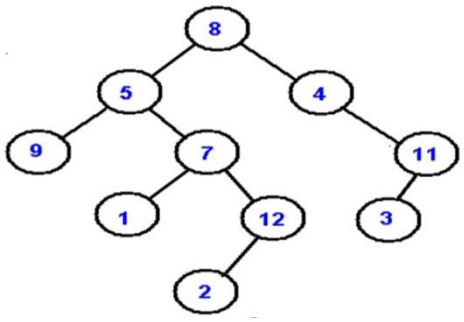
OR

(a) Write algorithm of circular singly Linked List with following operation. [08]
1. Insert end
2. Delete beginning

(b) Describe sparse matrix with example. [08]

Question: 5.

(a) Find out preorder, inorder and post order of following tree. [06]

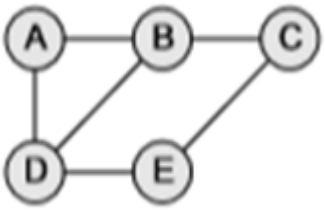


(b) Find Pre-order for given : [06]
In-order : D B E A F C G
Post-order : D E B F G C A

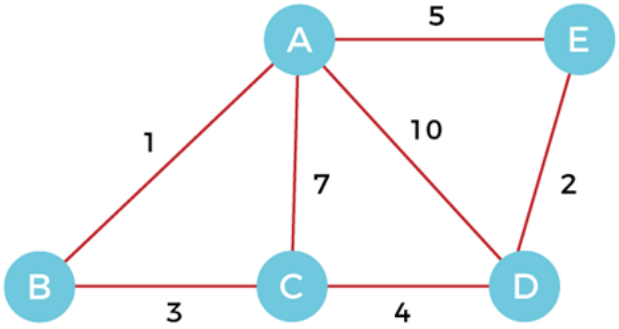
(c) Draw binary search tree for following elements. [04]
11,6,8,19,4,10,5,17,43,49,31

OR

(a) Find out adjacency matrix and adjacency list of following graph. [06]



(b) Find minimum spanning tree of following graph using Kruskal's Algorithm. [06]



(c) Differentiate BFS and DFS. [04]

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Question: 6.

(a)	Write an algorithm to perform linear search operation.	[08]
(b)	Discuss technique of insertion sort through following elements. 12 31 25 8 32 17	[04]
(c)	Differentiate linear search and binary search.	[04]

OR

(a)	Write a program to sort element using bubble sort.	[08]
(b)	Discuss technique of heap sort through following elements. 81,89,9,11,14,76,54,22	[04]
(c)	Discuss technique of merge sort through following elements. 12,31,25,8,32,17,40,42	[04]

---Best of Luck---

Enroll. No._____

MARWADI UNIVERSITY

Faculty of Computer Application

M.C.A.

SEM: 1 **MU FINAL** **JANUARY: 2022**

Subject: - (Data Structure) (05MC0101) **Date:- 23/01/2023**

Total Marks:-100 **Time: - 03 Hours**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1.

(a) Answer the following objectives [10]

1._____ operation adds an element to the top of the stack.
A) pop B) update
C) push D) all of the above

2. (A+B) is example of which of the following notation.
A) outprefix B) prefix
C) postfix D) infix

3. In _____ data structure, the data items are arranged in a linear sequence.
A) linear B) non linear
C) homogeneous D) all of above

4. A function calls itself is called _____.
A) secursion B) recursion
C) position D) none of above

5. Stack uses _____ data structure as the element that was inserted last is the first one to be taken out.
A) LIPO B) FIFO
C) LIFO D) FIPO

6. In _____ linked list it contains three parts data , next and previous.
A) singly B) super
C) singly circular D) doubly

7. If the tree is not empty, then the first node is called _____.
A) root B) internal node
C) leaf D) none of above

8. If START=_____ then it means that the singly linked list is empty and contains no nodes.
A) FULL B) NULL
C) START D) none of above

9. Each element in a tree is known as _____ of a tree.
A) root B) leaf
C) node D) none of above

10. _____ is any node with an out-degree zero.
A) root B) internal node
C) parent D) leaf

(b) Answer the following questions. [10]

1. Define: Stack
2. Define: Queue
3. Define: Linked List
4. Define: Tree
5. Define: Graph
6. Define: Algorithm
7. Define: Siblings
8. Define: Binary Tree
9. Define: Linear Search
10. Define: Isolated Node

Question: 2.

(a) List and explain categories of data structure in detail [08]

(b) List Steps of Tower of Hanoi for moving 3 Discs with diagram. [08]

OR

(b) Convert Following Infix Expression to postfix using stack. (A+B/C*(D+E)-F) [08]

Question: 3.

(a) Write an algorithm of doubly Linked List with following operation. [08]
1. Insert at Beginning
2. Delete Last Node

(b) Explain node structure of polynomial manipulation with e.g. [04]

(c) What is sparse matrix? Draw Multilinked structure of sparse matrix with example [04]

OR

(a) Write an algorithm of Singly Linked List with following operation. [08]
1. Insert a node after given node
2. Delete node at Beginning

(b) Describe Simple Queue and write algorithm of insert operation. [04]

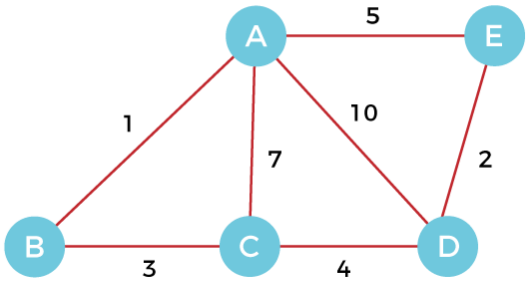
(c) Describe Stack and write algorithm of push and pop operation. [04]

Question: 4.

(a) Construct AVL tree of given elements : 3,2,1,4,5,6,7 [08]

(b) Find minimum spanning tree of following graph using Kruskal's Algorithm. [08]

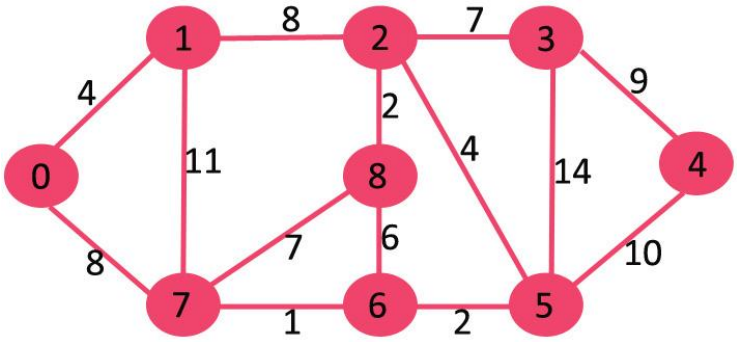
Suppose a weighted graph is -



OR

(a) Construct B-Tree Order 3 using following elements : [08]
20 30 35 85 10 55 60 25

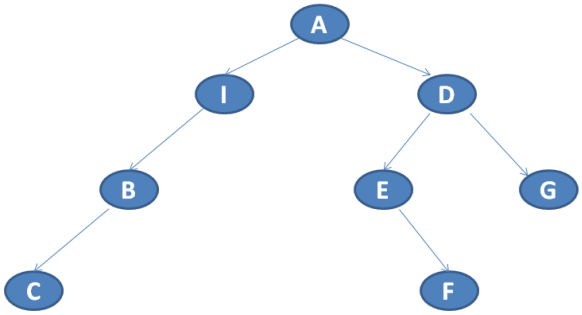
(b) Find minimum spanning tree of following graph using Prim's Algorithm. [08]



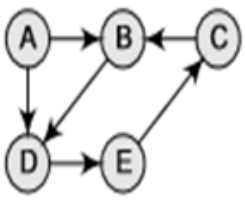
Question: 5.

(a) Draw Tree and Find Pre-order for given: [06]
In-order : D B E A F C G
Post-order : D E B F G C A

(b) Convert following binary Tree into Threaded Binary Tree. [06]



(c) Draw Adjacency matrix for following graph [04]

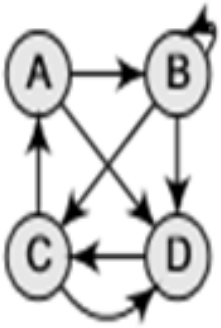


OR

(a) Differentiate BFS and DFS [06]

(b) Create Binary Search Tree of following elements. [06]
50,76,21,4,32,64,15,52,14,100,83,2,3,70,87,80

(c) Draw Adjacency List for following graph. [04]

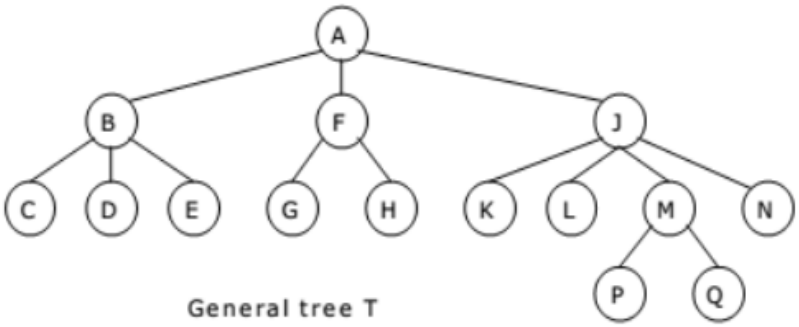


Question: 6.

(a) Sort following elements in ascending order using heapsort : (max heap) [08]
81 89 9 11 14 76 54 22

(b) Differentiate Linear search vs. Binary Search [04]

(c) Convert following general tree into threaded binary tree. [04]



General tree T

OR

(a) Sort following elements in ascending order using merge sort. [08]
12 31 25 8 32 17 40 42

(b) Sort following elements in ascending order using bubble sort. [04]
13 12 26 35 10

(c) Explain following hashing functions with example. [04]
a. Division method
b. Folding method

---Best of Luck---

Enroll. No._____

MARWADI UNIVERSITY

Faculty of Computer Applications

Masters of Computer Applications

SEM: 1 **MU FINAL EXAM** **January: 2024**

Subject: - Object Oriented Programming using JAVA (05MC0103) **Date:- 22-01-2024**

Total Marks:-100 **Time: - 3 Hrs.**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1.

(a) MCQ Questions [10]

1) What is the extension of java code files?
   (a) .js
   (b) .txt
   (c) .class
   (d) .java

2) _____ is known as the base class of all classes in java.

   (a) Object
   (b) Class
   (c) Exception
   (d) None of the above

3) Scanner class belongs to _____ package.

   (a) java.lang
   (b) java.util
   (c) java.io
   (d) None of the above

4) _____ is known as the default package of java.

   (a) java.util
   (b) java.io
   (c) java.lang
   (d) None of the above

5) In Java a thread can be created by _____.

   (a) extending the Thread class.
   (b) implementing the Runnable interface.
   (c) Both a and b
   (d) None of these

6) _____ is the default priority of Thread

(a) 1
(b) 5
(c) 10
(d) none of the above

7) _____ is the base class of every Exception classes in java.

(a) Throwable
(b) Exception
(c) Error
(d) None of these

8) _____ block if present will always be executed.

(a) finally
(b) static
(c) final
(d) None of the above

9) What type of methods an interface contains by default?

(a) abstract
(b) static
(c) final
(d) private

10) _____ is known as a class which has no name.

(a) Inner class
(b) Anonymous class
(c) Static nested class
(d) Local class

(b) Give Answers in one sentence. [10]

1. Who is known as the father of Java?
2. List out the primitive data types of java.
3. What keyword is used to perform inheritance in java?
4. List out the operators of java.
5. List out the members of class in java.
6. List out the features of OOP.
7. Give the difference between String and StringBuffer.
8. What is Daemon Thread?
9. Give the difference between throw and throws in java.
10. What is the full form of JVM.

Question: 2.

(a) Explain features of Java in detail. [08]

(b) Describe Initializer block and Class-Initializer block in java. [08]

OR

(b) Describe Constructors in java by giving suitable example. [08]

Question: 3.

(a) Explain the role of interface in java by giving a suitable example. [08]

(b) Write a note on finally keyword in java. [04]

(c) Write a note on method overloading in java. [04]

OR

(a) Describe abstract class in java by giving a suitable example. [08]

(b) Write a note on this keyword in java. [04]

(c) Write a note on programming structure of java. [04]

Question: 4.

(a) What is Inheritance? Describe in detail about various types of inheritance. Also give suitable example of Multi-level inheritance [08]

(b) Explain about Exception handling in java by giving a suitable example. [08]

OR

(a) Explain collections in detail by giving a suitable example. [08]

(b) Explain about generics in detail by giving a suitable example. [08]

Question: 5.

(a) Write a note on final keyword in java by giving a suitable example. [06]

(b) Discuss about Wrapper classes in java by giving a suitable example. [06]

(c) Write a note on static keyword in java. [04]

OR

(a) Write a note on the concept of Lambda expression in java by giving a suitable example. [06]

(b) Discuss about packages in java by giving a suitable example. [06]

(c) Write a note on Type Casting and Type conversion in java. [04]

Question: 6.

(a) Write a note on Thread Life cycle in detail. [08]

(b) Create a java program to copy the content of one file in another file. [04]

(c) Create a class "Vehicle" with instance variable vehicle_type. Inherit the class in a class called "Car" with instance model_type, company name etc. display the information of the vehicle by defining the display() in both super and sub class. [04]

OR

(a) Write a note on nested classes in java in detail. [08]

(b) Create a java program that executes two threads. One thread displays "Thread1" every 2,000 milliseconds, and the other displays "Thread2" every 4,000 milliseconds. Also note that the it should display the output of every thread at least 5 times. [04]

(c) Create a java program that demonstrates any four methods of String Class and also give the output of the program. [04]

---Best of Luck---

Enroll. No._____

MARWADI UNIVERSITY

Faculty of Computer Applications

Masters of Computer Applications

SEM: 1 **MU FINAL EXAM** **January: 2023**

Subject: - Object Oriented Programming using JAVA (05MC0103) **Date:- 27-01-2023**

Total Marks:-100 **Time: - 02:00 pm to 05:00 pm**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1.

(a) MCQ Questions [10]

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6) _____ is the default priority of Thread

(a) 1
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(c) 10
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7) _____ is the base class of every Exception classes in java.

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(c) final
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9) What type of methods an interface contains by default?

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(b) static
(c) final
(d) private

10) _____ is known as a class which has no name.

(a) Inner class
(b) Anonymous class
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(d) Local class

(b) Give Answers in one sentence. [10]

1. Who is known as the father of Java?
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(a) Describe abstract class in java by giving a suitable example. [08]

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Question: 4.

(a) What is Inheritance? Describe in detail about various types of inheritance. Also give suitable example of Multi-level inheritance [08]

(b) Explain about Exception handling in java by giving a suitable example. [08]

OR

(a) Explain collections in detail by giving a suitable example. [08]

(b) Explain about generics in detail by giving a suitable example. [08]

Question: 5.

(a) Write a note on final keyword in java by giving a suitable example. [06]

(b) Discuss about Wrapper classes in java by giving a suitable example. [06]

(c) Write a note on static keyword in java. [04]

OR

(a)	Write a note on the concept of Lambda expression in java by giving a suitable example.	[06]
(b)	Discuss about packages in java by giving a suitable example.	[06]
(c)	Write a note on Type Casting and Type conversion in java.	[04]

Question: 6.

(a)	Write a note on Thread Life cycle in detail.	[08]
(b)	Create a java program to copy the content of one file in another file.	[04]
(c)	Create a class "Vehicle" with instance variable vehicle_type. Inherit the class in a class called "Car" with instance model_type, company name etc. display the information of the vehicle by defining the display() in both super and sub class.	[04]

OR

(a)	Write a note on nested classes in java in detail.	[08]
(b)	Create a java program that executes two threads. One thread displays "Thread1" every 2,000 milliseconds, and the other displays "Thread2" every 4,000 milliseconds. Also note that the it should display the output of every thread at least 5 times.	[04]
(c)	Create a java program that demonstrates any four methods of String Class and also give the output of the program.	[04]

---Best of Luck---

Enroll. No._____

MARWADI UNIVERSITY

Faculty of Computer Application

Master of Computer Application

SEM:1 **MU FINAL EXAM** **JAN: 2024**

Subject: - (Operating Systems) (05MC0104) **Date:-24/01/2024**

Total Marks:-100 **Time: -12.30 to 3.30**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Do not write/sign/indication/tick mark anything other than Enroll No. at a specific place on the question paper.**

Question: 1.

(a) Objective MCQ (No. of Questions 10) [10]

1. What is the principal objective of batch multiprogramming?
A. Maximize processor use B.Minimize response time C.deadlock D.none

2. What is heart of OS?
A. processor B.kernel C.scheduling D.none

3. A problem encountered in multitasking when a process is denied necessary resource is called
A. deadlock B.invartion C.starvation D.aging

4. A thread is also called_____
A. Light weight process B.Heavy weight process C.Process D.Light weight process

5. Counting semaphore is equal to_____
A. General semaphore B.Binary semaphore C.both A and B. D.none

6. A variable length block of process is_____
A. page B.segment C.frame D.none

7. Which of the following is not an operating system?
A. Windows B.Linux C.Oracle D.Dos

8. Which of the following is placement algorithm for dynamic partitioning?
A. Best-fit B.First-fit C.Next-fit D.All of the mentioned

9. What is the principal objective of batch multiprogramming?
A. Maximize processor use B.Minimize response time C.deadlock D.none

10. What is heart of OS?
A. processor B.kernel C.scheduling D.none

(b) Short Que. (answer in one sentence: No. of Questions 10) [10]
1. List Types of RAID.
2. What is multithreading?

3. Define Process Spawning
4. What is turnaround time?
5. Define: race condition
6. PCB stands for_____.
7. Define: Critical section
8. What is short term scheduling?
9. Define starvation.
10. Define: Multiprogramming.

Question: 2.

(a) What is buddy system? Explain the system in detail with tree representation. [08]

(b) Explain Multithreading. List out benefits of threading. [08]

OR

(b) Explain paging with its need and mechanism of paging. [08]

Question: 3.

(a) What is semaphore? Differentiate: strong semaphore and weak semaphore. [08]
(b) Explain thread synchronization. [04]

(c) Discuss RAID and explain any 4 level of RAID. [04]

OR

(a) Explain Pile and sequential file organization methods in detail [08]

(b) Explain the queuing diagram used for five state process models. [04]

(c) Differentiate : Process Vs. Thread [04]

Question: 4.

(a) Explain typical elements of process control block. [08]

(b) Explain Page table and segment table entries for virtual memory. [08]

OR

(a) Explain producer consumer problem with infinite buffer and circular buffer [08]

(b) Discuss scheduling? Explain criteria and purpose of CPU scheduling. [08]

Question: 5.

(a) Differentiate: Fixed Partitioning and Dynamic Partitioning techniques. [06]

(b) Explain the difference between Simple paging and virtual memory paging. [06]

(c) Compare response time and waiting time. [04]

OR

(a) What is Operating System? Explain the evolution of Operating System. [06]

(b) Discuss buffering? Explain Types of buffering. [06]

(c) Explain deadlock prevention strategies. [04]

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Question: 6.

(a) Discuss producer consumer problem [08]

(b) Explain shortest job first method in brief. [04]

(c) Explain Page replacement algorithm in detail [04]

OR

(a) What is file sharing? What issues are there for file sharing? Explain in depth. [08]

(b) Why is computer security important? [04]

(c) List out scheduling algorithms. Perform FCFS algorithm for following process. [04]

Process	Arrival time	Service Time
A	0	3
B	2	6
C	4	4
D	6	5
E	8	2

---Best of Luck---

Enroll. No._____

MARWADI UNIVERSITY

Faculty of Computer Applications

[MCA] [MCA]

SEM: 1st **MU FINAL EXAM** **MONTH: JanYEAR: 2023**

Subject: - (Operating Systems) (05MC0104) **Date: - 01/02/2023**

Total Marks:-100 **Time: - 02:00 Pm to 05:00 Pm**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1. **Answer the following objectives** [10]

(A)

(1) What is an operating system?
a. Interface between the hardware and application programs
b. collection of programs that manages hardware resources
c. system service provider to the application programs
d.) all of the mentioned

(2) What is the most used computer operating system?
a. Linux
b. Windows
c. Chrome os
d. Android

(3) Which scheduling algorithm allocates the CPU first to the process that requests the CPU first?
a. first-come, first-served scheduling
b. shortest job scheduling
c. priority scheduling
d. none of the mentioned

(4) A system is in the safe state if _____
a. the system can allocate resources to each process in some order and still avoid a deadlock
b. there exist a safe sequence
c. all of the mentioned
d. none of the mentioned

(5) In operating system, each process has its own _____
a. open files
b. pending alarms, signals, and signal handlers
c. address space and global variables
d. all of the mentioned

(6) For non sharable resources like a printer, mutual exclusion _____
a. must exist
b. must not exist
c. may exist
d. none of the mentioned

(7) Whenever a process needs I/O to or from a disk it issues a _____
a. system call to the operating system
b. a special procedure
c. system call to the CPU
d. all of the mentioned

(8) Which one of the following is the address generated by CPU?
a. physical address
b. absolute address
c. logical address
d. none of the mentioned

(9) _____ is a unique tag, usually a number identifies the file within the file system.
a. File identifier
b. File name
c. File type
d. None of the mentioned

(10) What is Cyber Security?
a. Cyber Security provides security against malware
b. Cyber Security provides security against cyber-terrorists
c. Cyber Security protects a system from cyber attacks
d. All of the mentioned

Question: 1. **Answer the following questions.** [10]
(B)

(1) What is operating system?

(2) Define: Batch operating systems

(3) What is a Process?

(4) What is do you mean by multithreading?

(5) Define: Critical Section

(6) Define: Race Condition.

(7) What is File Management System?

(8) What do you mean by Deadlock?

(9) What is Phishing method in cyber security?

(10) What do you mean by dynamic-size partition?

Question: 2.

(a) List and explain the reasons for process termination in detail. [08]

(b) Define Operating System. Explain in brief objectives of an operating system. [08]

OR

(b) Explain Simple batch system and multiprogrammed batch system in detail. [08]

Question: 3.

(a) What is PCB? Explain in brief. [08]

(b) Write a note on Disk RAID. [04]

(c) Differentiate strong semaphore and week semaphore [04]

OR

(a) Explain any two Page replacement algorithms in detail. [08]

(b) Write a brief note on FCFS Scheduling. [04]

(c) Explain fixed-size Partitioning technique in detail with suitable diagram. [04]

Question: 4.

(a) Explain seven state process model in detail with suitable diagram. [08]

(b) Explain deadlock detection algorithm with example. [08]

OR

(a) What are the various allocations methods for the files? Explain in brief. [08]

(b) Explain any two Non pre-emptive CPU scheduling algorithms with examples. [08]

Question: 5.

(a) Differentiate: Process and Thread. [06]

(b) Write the objectives of file management system. [06]

(c) Explain the reasons for process creation. [04]

OR

(a) Explain HRRN algorithm in brief with suitable example. [06]

(b) Draw and explain five state process model in brief. [06]

(c) Determine the differences between user level thread and kernel level thread. [04]

Question: 6.

(a) Consider the following set of processes, arrival time and Burst time. Calculate the average waiting time and Response time using Round Robin algorithm.(TQ=2 Sec) [08]

Process Arrival Time Burst Time

P1	0	5
P2	1	4
P3	2	2
P4	4	1

(b) Write a short note on Semaphore. [04]

(c) Explain producer consumer problem. [04]

OR

(a) Explain dining philosopher problem and solution with semaphore. [08]

(b) What is trace and dispatcher? Explain with process execution example [04]

(c) Explain characteristics of modern Operating System. [04]

---Best of Luck---

Enroll. No._____

MARWADI UNIVERSITY

Faculty of Computer Applications

M.C.A.

SEM: 1 **MU FINAL EXAM** **JANUARY: 2024**

Subject: - Relational Database Management Systems (05MC0105) **Date: - 31-01-2024**

Total Marks:-100 **Time: - 03 Hours**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1.

1. Objective MCQ: [10]
   1. Which data model is an extension of the hierarchical model?
      (a) Relational model
      (b) Entity-relationship model
      (c) Network model
      (d) Data model
   2. Processed data is known as _____.
      (a) Database
      (b) Fact
      (c) Information
      (d) Table
   3. Which symbol is used in E-R Diagram to represent a Relationship?
      (a) Ellipse
      (b) Diamond
      (c) Rectangle
      (d) Square
   4. A relation R is said to be in_____, if and only if it is in 1NF and no any non-primary key attribute is partially dependent on the primary key.
      (a) 1NF
      (b) 2NF
      (c) 3NF
      (d) UNF
   5. A transaction which is successfully completes its execution is said to be committed otherwise the transaction is _____.
      (a) Committed
      (b) Deleted
      (c) Erased
      (d) Aborted
   6. Which command gives object privileges to the users?
      (a) GIVE
      (b) GRANT
      (c) REVOKE
      (d) ACCESS
   7. Which keyword is missing from the following query?
      DELETE EMP WHERE EMPNO=30;
      (a) AS
      (b) INTO
      (c) *
      (d) FROM

8. Which operator is used for pattern matching?
   (a) EXIST
   (b) IN
   (c) LIKE
   (d) BETWEEN
9. Out of the following which pair of sections are mandatory for PL/SQL block?
   (a) Declare, End
   (b) Begin, Exception
   (c) Begin, End
   (d) Exception, End
10. In which mode/modes one can pass the parameters to a procedure?
    (a) Only OUT
    (b) IN, OUT & INOUT
    (c) Only IN
    (d) Non of the above

2. Short Que. (answer in one sentence) [10]

1. List out the various data models.
2. Define: Information
3. What is binary relationship?
4. Which attribute cannot be divided into subparts?
5. Give the full form of DAC.
6. As per the full form of ACID property C stands for:
7. What is the full form of SQL?
8. Which function is used for converting string to upper case?
9. List out the sections of generic PL/SQL block.
10. Which command is used to remove an Oracle trigger?

Question: 2.

(a) Outline and Compare Internal Level and Conceptual level with respect to ANSI SPARC three level database architecture. [08]

(b) Explain Network Model along with its advantages and disadvantages. [08]

OR

(b) Show and explain characteristics of DBMS. [08]

Question: 3.

(a) What is Normalization? Apply 1NF, 2NF and 3NF with suitable example. [08]

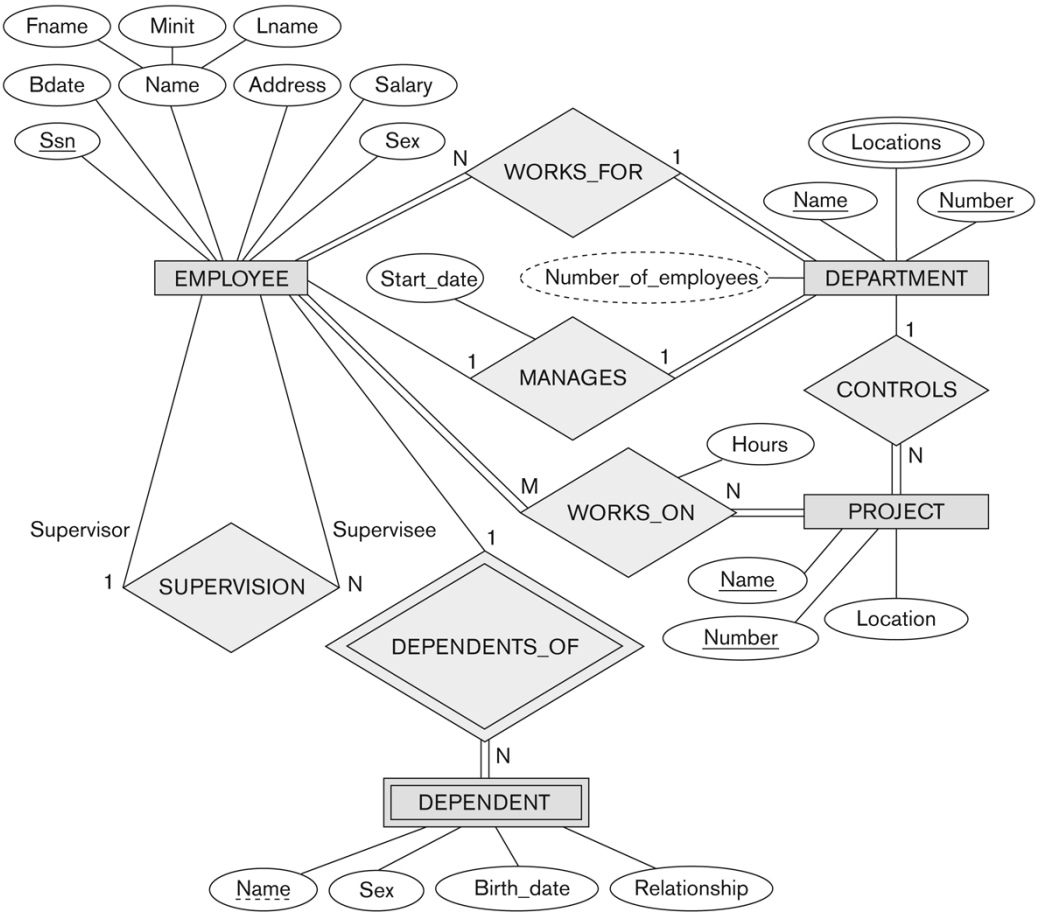
(b) Identify and discuss the major components of ER Diagram. [04]

(c) Identify Binary and Ternary Relationships with suitable example. [04]

OR

(a) From the following E-R diagram identify: [08]

(1) Composite Attribute
(2) Multi-valued Attribute
(3) Derived Attribute
(4) Strong Entity Set
(5) Weak Entity Set
(6) Identifying relationship
(7) Discriminator / Partial Key
(8) Key Attributes



(b) Identify and differentiate between strong entity and weak entity. [04]

(c) Model and explain different types of Database Anomalies. [04]

Question: 4.

(a) Construct state transition diagram for a particular transaction and also explain each transaction state in detail. [08]

(b) Analyze Mandatory Access Control (MAC) security scheme. [08]

OR

(a) Identify and discuss about ACID properties of a transaction. [08]

(b) Contrast between Authorization and Authentication. [08]

Question: 5.

(a) Inspect INSERT, UPDATE and DELETE commands with its syntax, purpose and example. [06]

(b) Analyze Unique and Not Null constraints with suitable example. [06]

(c) List and explain range searching operator with example. [04]

OR

(a)	Inspect COMMIT, ROLLBACK and SAVEPOINT commands with its syntax, purpose and example.	[06]
(b)	List and explain Group Function / Aggregate Functions with suitable example.	[06]
(c)	Construct and write SQL query for the following: Table: student (sid, student_name, course, city) (1) Create the student table with the all the columns (sid is primary key). (2) Display the details of students whose city is 'Rajkot'. (3) Display name of the students who studying in BCA course. (4) Show the student data in descending order of student name column.	[04]

Question: 6.

(a)	Explain generic PL/SQL block structure with each section.	[08]
(b)	Create a PL/SQL procedure to print square of given number.	[04]
(c)	Discuss in detail about BEFORE TRIGGER and AFTER TRIGGER.	[04]

OR

(a)	Explain any 04 advantages of PL/SQL.	[08]
(b)	Create a PL/SQL function which takes temperature in Fahrenheit and show it in Celsius. (Formula: (F - 32) * 5/9)	[04]
(c)	Discuss in detail about ROW TRIGGER and STATEMENT TRIGGER.	[04]

---Best of Luck---

Enroll. No._____

MARWADI UNIVERSITY

Faculty of Computer Applications

[FoCA] **[MCA]**

SEM: 1 **MU FINAL EXAM** **FEBRUARY: 2023**

Subject:- (Relational Database Management System) (05MC0105) **Date:- 06/02/2023**

Total Marks:- 100 **Time: - 03:00 hours**

Instructions:

1. **All Questions are Compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Question: 1.

(a) Identify the following MCQs: [10]

(1) ____ is known as data about data.
(a) Field (b) Record
(c) Metadata (d) Mapping

(2) Processed data is known as _____.
(a) Database (b) Fact
(c) Information (d) Table

(3) Which symbol is used in E-R Diagram to represent an Attribute?
(a) Ellipse (b) Diamond
(c) Rectangle (d) Square

(4) Relationship between three entities is called _____ relationship.
(a) Unary (b) Ternary
(c) N-ary (d) Binary

(5) As per the full form of ACID property D stands for:
(a) Data (b) Decomposition
(c) Durability (d) Demand

(6) Give the full form of DAC.
(a) Direct Access Control (b) Demand Access Control
(c) Discretionary Access Control (d) Data Access Control

(7) Which function is used for calculating total?
(a) SUM (b) AVG
(c) TOTAL (d) ADD

(8) Fill the blanks if output is 5 for the following query:
SELECT _____(25) FROM DUAL;
(a) SQUARE-ROOT (b) LENGTH
(c) AVG (d) SQRT

(9) How many sections are there in PL/SQL generic block structure?
(a) 1 (b) 2
(c) 3 (d) 4

(10) Which command is used to remove an Oracle trigger?
(a) ERASE (b) DROP
(c) DELETE (d) REMOVE

(b) Do as directed: [10]

(1) Define: RDBMS
(2) Define: Attributes
(3) Define: Derived Attribute
(4) Define: Weak Entity Set
(5) Define: Authorization
(6) Define: Simple Security Property
(7) Define: Unique Constraint
(8) Define: Rollback
(9) Define: Anchored Datatype
(10) List out Procedure Parameters.

Question: 2.

(a) Describe Characteristics of Database Approach. [08]

(b) Discuss Centralized Client/Server architecture in detail. [08]

OR

(b) Describe the three schema architecture with diagram. [08]

Question: 3.

(a) Explain any 4 types of attributes in ER Diagram. [08]

(b) List out all types of Functional Dependency. [04]

(c) Describe insert anomaly with example. [04]

OR

(a) Write note on Normalization with example. [08]

(b) Write note decomposition with its types. [04]

(c) Describe delete anomaly with example. [04]

Question: 4.

(a) Determine Transaction Properties. [08]

(b) Classify MAC in detail. [08]

OR

(a) Determine Transaction Execution State Transition Diagram in detail. [08]

(b) Classify Public Key Infrastructure. [08]

Question: 5.

(a) Examine any three DDL commands. [06]

(b) Specify any three Integrity Constraints. [06]

(c) Differentiate: DELETE V/S TRUNCATE. [04]

OR

(a)	Examine any three DML commands.	[06]
(b)	Specify LIKE Operator with suitable example.	[06]
(c)	Differentiate: GRANT V/S REVOKE.	[04]

Question: 6.

(a)	Write a note Advantages of PL/SQL.	[08]
(b)	Display numbers from 1 to 5 along with their square values using WHILE construct.	[04]
(c)	Write a trigger for INSERT, UPDATE and DELETE operation in one program.	[04]

OR

(a)	Conclude types of Triggers in PL/SQL.	[08]
(b)	Write a procedure that shows the use of INOUT parameter.	[04]
(c)	Write a function that computes and returns the maximum of two values.	[04]

---Best of Luck---