

Hall Ticket No:

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Question Paper Code: 16MCA104

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R16) Regular End Semester Examinations – June 2017

(Regulations: R16)

DATABASE MANAGEMENT SYSTEMS

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part-A or B only

Q.1(A) What is a Database? Explain the overall system architecture of DBMS. 10M

OR

Q.1(B) What is an E-R Diagram? Design an E-R Diagram for an Educational Institute. 10M

Q.2(A) Define the various set operations in SQL with an example. 10M

OR

Q.2(B) Create an employee table and implement DDL, DML, DCL Commands based on employee table? 10M

Q.3(A) What is a normal form? Explain various normal forms in brief. 10M

OR

Q.3(B) What is decomposition? Explain the process of decomposing the task. 10M

Q.4(A) What is concurrency? Explain in detail about lock based concurrency control mechanism with an example. 10M

OR

Q.4(B) Write about ACID Properties? 10M

Q.5(A) What is a function? Create your own function and access the function. 10M

OR

Q.5(B) With an example, explain the cursors. 10M

***** END*****

Hall Ticket No:

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Question Paper Code: 16MCA105

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R16) Regular End Semester Examinations – June 2017

(Regulations: R16)

DATA STRUCTURES THROUGH C++

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part-A or B only

- Q.1(A) i. Differentiate between C and C++. 10M
ii. What is stream and stream classes? How streams are represented in C++?
OR
- Q.1(B) i. Define inline function? Write a program for finding the area of a triangle using inline functions. 10M
ii. Write program to find whether the given number is strong number or not.
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- Q.2(A) i. What is generic programming? Explain in detail about function templates? 10M
ii. Explain the procedure to catch multiple exceptions thrown from a single try block?
OR
- Q.2(B) i. Write the syntax for defining a derived constructor. 10M
ii. Differentiate between derived constructor and base constructor.
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- Q.3(A) Develop a Linked Queue class and include the functions to check. Whether the queue is full and returns the first and last element of the queue 10M
OR
- Q.3(B) What is a priority queue? How do you differentiate minimum priority queue from maximum priority queue? Write the ADT class definition for Maximum priority Queue 10M
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- Q.4(A) Write class definition for Hash table. Write C++ codes for searching an element with & inserting an element into the Hash Table. 10M
OR
- Q.4(B) Define Double linked list. Write algorithm to insert and delete operations for Circular Doubly linked list. 10M
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- Q.5(A) Explain common ways to traverse a binary tree. Write a C++ code to perform tree traversal for counting number of nodes in the tree. 10M
OR
- Q.5(B) i. Write an algorithm to implement the binary search and calculate its complexity 10M
ii. What is radix sort? Explain it with an example
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Question Paper Code: 16MCA106

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

MCA I Year II Semester (R16) Regular End Semester Examinations – June 2017

(Regulations: R16)

OPERATING SYSTEMS

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.

In Q.no 1 to 5 answer either Part-A or B only

Q.1(A) Explain the various types of System calls with an example for each. 10M

OR

Q.1(B) What is operating system? Discuss about the evolution of operating system. 10M

Q.2(A) Explain the following LINUX UTILITIES 10M

- i) File Handling
- ii) Process
- iii) Networking Commands

OR

Q.2(B) What is AWK? Explain fields and records in Unix with example 10M

Q.3(A) What are the responsibilities of Shell? Write a shell program to perform simple arithmetic operation? 10M

OR

Q.3(B) Explain the following aspects of shell 10M

- i) Control structures
- ii) Shell variables
- iii) Pipe and input redirection

Q.4(A) What is process scheduling? Explain the different type of process scheduling methods with an example. 10M

OR

Q.4(B) What is deadlock? Discuss about detection and recovery from deadlock. 10M

Q.5(A) Explain the different type of page replacement algorithms with an example. 10M

OR

Q.5(B) Explain the effect of thrashing. With a neat sketch, explain how logical address is translated into physical address using Paging mechanism. 10M

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DISCRETE MATHEMATICS

Time: 3Hrs

Max Marks: 50

Attempt all the questions. All parts of the question must be answered in one place only.
In Q. no 1 to 5 answer either Part-A or B only

- Q.1(A) (i) If $U = \{1,2,3,\dots,9,10\}$, $A = \{1,2,3,4,5,6,7\}$ and $B = \{1,3,6\}$ then find $A \cup B$, $A - B$, $A \cap B$ and \bar{A} . 10M
(ii) Show that $7(p \vee q)$ and $7p \wedge 7q$ are logically equivalent.

OR

- Q.1(B) Define PDNF. Obtain PDNF of $(p \wedge q) \vee (7p \wedge r) (q \wedge r)$. 10M

- Q.2(A) Define the Division algorithm. What are the quotient and remainder when (i) 101 is divided by 11? (ii) -11 is divided by 3? 10M

OR

- Q.2(B) Show that if n is a positive integer, then $1^3 + 2^3 + 3^3 + \dots + n^3 = \left[\frac{n(n+1)}{2} \right]^2$ 10M

- Q.3(A) State pigeon hole principle. Find the least number of ways of choosing three different numbers from 1 to 10 so that all choices have the same sum. 10M

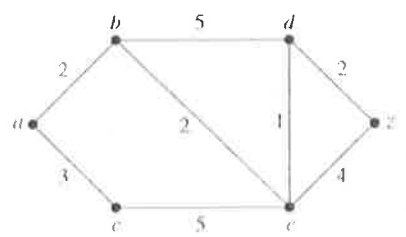
OR

- Q.3(B) Explain (i) Partial Order relation (ii) Equivalence relation 10M

- Q.4(A) Define and explain graph coloring problem. Find the chromatic number of
i) a bipartite graph $K_{3,3}$
ii) a complete graph K_n and
iii) a wheel graph $W_{1,n}$. 10M

OR

- Q.4(B) Find the length of a shortest path between the vertices a and z in the weighted graph 10M



- Q.5(A) Solve the recurrence relation $a_{n+2} - 4a_{n+1} + 3a_n = -200, n \geq 0$ and $a_0 = 3000, a_1 = 3300$. 10M

OR

- Q.5(B) Using generating function, solve $y_{n+2} - 4y_{n+1} + 3y_n = 0$, given $y_0 = 2, y_1 = 4$. 10M

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