MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE
(UGC-AUTONOMOUS)

Direct 2ⁿᵈ Year MCA I Year I Semester (R14) Regular End Semester Examinations – Dec/Jan- 2015-16
(Regulations: R14, Only for 2015 Admitted Batch)

ADVANCED DATABASE MANAGEMENT SYSTEM

Time: 3Hrs   Max Marks: 60

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

Q.1(I)	a. What are 'Database Management Systems'? What is their major purpose?	2M
	b. What is 'Abstraction'? What are *three* levels of Data Abstraction?	4M
	c. What are the main concepts in ER Diagrams?	6M

<div align="center">OR</div>

Q.1(II)	a. What are the roles of database administrators, application programmers and end users of a database? Who needs to know the most about database systems?	4M
	b. Sketch the DBMS Architecture and identify the main components in it.	8M

Q.2(I)	a. How to create, modify and delete tables in SQL? Exemplify.	4M
	b. What relational set operators SQL support? Provide an example for each.	4M
	c. What are Correlated and Sub Queries? Give an example for each in SQL.	4M

<div align="center">OR</div>

Q.2(II)   Consider the following relational schema:

items_ordered (*customerid*: integer, *order_date*: date, *item*: string, *quantity*: integer, *price*: real)

customers (*customerid*: integer, *firstname*: string, *lastname*: string, *city*: string, *state*: string)

The key fields are underlined and the domain of each field is listed after the field name. Write the following queries in SQL:

a.	Select all columns from the items_ordered table for whoever purchased a 'Tent' item.	1M
b.	Select the item and per unit price for each item in the items_ordered table. Hint: Divide the price by the quantity from the items_ordered table.	1M
c.	Select the average price of all of the items ordered that were purchased in the month of December.	2M
d.	How many people are in each unique state in the customers table that has more than one person in the state? Select the state and display the number of how many people are in each if it is greater than 1.	2M
e.	Select the customerid, order_date, and item from the items_ordered table for all items unless they are 'Snow Shoes' or if they are 'Ear Muffs'. Display the rows as long as they are not either of these two items.	2M
f.	Select the firstname, city, and state from the customers table for all of the rows where the state value is either: Arizona, Washington, Oklahoma, Colorado, or Hawaii.	2M
g.	Using a Join, Determine which items were ordered by each of the customers in the customers table. Select the customerid, firstname, lastname, order_date, item, and price for everything each customer purchased in the items_ordered table. Display the results sorted by state in Descending order.	2M

| Q.3(I) | a. What normal forms are based on FDs? Define 1NF, 2NF, 3NF and BCNF. | 6M |
| | b. What are Multi-Valued, Join and Inclusion Dependencies. | 6M |

OR

| Q.3(II) | a. Define Functional Dependencies. How are primary keys related to FDs? | 4M |
| | c. Define 4NF and 5NF and explain how they prevent certain kinds of redundancy that BCNF does not eliminate. | 8M |

| Q.4(I) | a. What four properties of transactions does a DBMS guarantee? | 4M |
| | b. Define optimistic, timestamp-based and multiversion concurrency control. | 8M |

OR

Q.4(II)	a. What transaction characteristics can a programmer control in SQL? What are different access modes and isolation levels, in particular?	4M
	b. What are lock conversions and why are they important? Compare lock upgrades with lock downgrades?	4M
	c. What is a log? For which actions a log record is written? What are recovery-related structures other than the log?	4M

| Q.5(I) | a. Explain Memory Hierarchy with a neat diagram. | 6M |
| | b. What are three architectures for Distributed DBMS? | 6M |

OR

| Q.5(II) | a. Describe how Search, Insert and Delete operations work in ISAM. | 10M |
| | b. Define 'Distributed Data Independence' and 'Transaction Atomicity'. | 2M |

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(UGC-AUTONOMOUS)

Direct 2nd Year MCA I Year I Semester (R14) Regular & Supplementary

End Semester Examinations – Dec/Jan- 2015-16

(Regulations: R14, Only for 2014 Admitted Batch)

ADVANCED DATABASE MANAGEMENT SYSTEM

Time: 3Hrs   Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only. **In Q.no 1 to 5 answer either I or II only**

Q.1(I)	a. Explain control structure in PL/SQl in detail.	12M
	OR	
Q.1(II)	a. Explain procedures in PL/SQL.	6+6
	b. Differentiate between embedded and dynamic PL/SQL.	M
Q.2(I)	Explain real time transaction system in detail.	12M
	OR	
Q.2(II)	What is Concurrency control? Explain Optimistic concurrency control in detail	12M
Q.3(I)	a. Explain implementation of O-R feature in detail	6+6
	b. Explain structured types in SQL	M
	OR	
Q.3(II)	a. Write structure of XML?	4+8
	b. Explain API in XML.	M
Q.4(I)	Explain security issues based on granting/revoking of privileges	12M
	OR	
Q.4(II)	a. Differentiate implicit and explicit locking.	12M
	b. Explain different types of locks	
Q.5(I)	Explain security and Integrity threats in detail	12M
	OR	
Q.5(II)	Explain all standards for interoperability and integration in detail	12M

*** END***

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Direct 2nd Year I Year I Semester Regular End Semester Examinations – Dec/Jan- 2015-16
(Regulations: R14)
DESIGN & ANALYSIS OF ALGORITHMS

Time: 3Hrs   Max Marks: 60

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

Q.1(I)   Explain the elementary data structures in detail with algorithm.   12M

OR

Q.1(II)   a. Explain about performance criteria of algorithm.   12M
          b. Explain UNION and FIND operations along with necessary algorithms.

Q.2(I)   a. Explain the concept of Divide & Conquer in detail.   12M
          b. write merge sort using divide and conquer for the following elements
            310 , 285 , 179 , 652 , 351 , 423 , 861 , 254 , 450 , 520 .

OR

Q.2(II)   a. Describe control abstraction of greedy method.   12M
          b. Find the maximum profit for the following instance of the knapsack problem using
greedy method $n = 3$, $m = 20$, $(p1 , p2 , p3) = (25 , 24 , 15)$ and
$(w1 , w2 , w3) = (18 , 15 , 10)$

Q.3(I)   What is meant by Optimal Binary Search Tree? Explain with example.   12M

OR

Q.3(II)   a. Elaborate the concept of Travelling Salesman Problem in detail with example.   12M
          b. Explain Depth First Search in detail.

Q.4(I)   a. What is coloring problem? Explain with example.   12M
          b. Explain Comparison Trees.

OR

Q.4(II)   Find the minimum cost of following Travelling Salesman Problem using Least Cost   12M
Branch & Bound Technique.

	V1	V2	V3	V4	V5
V1	∞	7	3	12	8
V2	3	∞	6	14	9
V3	5	8	∞	6	18
V4	9	3	5	∞	11
V5	18	14	9	8	∞

Q.5(I)   What do you mean by NP-Hard and NP Completeness? Discuss any two NP Hard   12M
Scheduling Problems.

OR

Q.5(II)   Discuss: Clique Decision Problem (CDP), Node Cover Decision Problem (NCDP),   12M
Chromatic Number Decision Problem (CNDP).

*** END***

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(Regulations: R14)

PROGRAMMING TO PYTHON

Time: 3Hrs   Max Marks: 60

> Attempt all the questions. All parts of the question must be answered in one place only.
> **In Q.no 1 to 5 answer either I or II only**

Q.1(I)	Explain software Development Life Cycle.	12M
	OR	
Q.1(II)	List the symbols of Flowchart and Give detail description of each symbol with example	12M
Q.2(I)	a) Differentiate interactive mode and Script mode. b) Write a program to print sum of 'n' numbers.	12M
	OR	
Q.2(II)	Explain various conditional statements with examples.	12M
Q.3(I)	a) Explain different loop statements with examples. b) Write a program to find whether a given string palindrome or not	12M
	OR	
Q.3(II)	Define persistence. How to read and write a file? Explain with example.	12M
Q.4(I)	a) Explain init method and str method with example each. b) What is overloading? Explain with an example.	12M
	OR	
Q.4(II)	Explain about event handling. Write a program to mouse event.	12M
Q.5(I)	List the operations of stack and explain with an algorithm	12M
	OR	
Q.5(II)	a) Write short notes on Queues? b) What is abstract data type explain with an example.	12M

*** END***

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ACCOUNTANCY & FINANCIAL MANAGEMENT

Time: 3Hrs   Max Marks: 60

Attempt all the questions. All parts of the question must be answered in one place only. **In Q.no 1 to 5 answer either I or II only**

Q.1(I)   From the following balances of Agarwal prepare Trading A/c, Profit and Loss A/c for   12M
the year ending 31st December, 2012 and Balance Sheet as of that date.

Particulars	Rs.	Particulars	Rs.
Purchases	7,000	Commission Received	500
Sales	14,400	Debtors	2,500
Opening Stock	1,500	Salaries	2,400
Machinery	4,000	Insurance	600
Cash	1,000	Buildings	7,500
Creditors	750	Bills Payable	1,000
Wages	1,500	Furniture	250
Printing and Stationery	850	Interest Received	400
Capital	12,500	Patents	2,000
Factory Rent	150	Bank overdraft	1,700

Closing Stock was valued at Rs.2, 750/-

OR

Q.1(II)   Define Journal. Explain its legal rules   12M

Q.2(I)   Discuss briefly functions of financial management.   12M

OR

Q.2(II)   A firm has sales of Rs.10 lakhs, variable cost and fixed cost of Rs.7 lakhs and   12M
Rs.2 lakhs. The debt of Rs.5 lakhs at 10% rate of interest. What is the Operating,
Financial and Combined leverage?

Q.3(I)   Define Ratio. Explain various Turnover and Financial ratios.   12M

OR

Q.3(II)   Distinguish between funds flow and cash flow statement.   12M

Q.4(I)   From the following calculate: 12M
   (a) P/V ratio
   (b) Break-even Point
   (c) Margin of safety

Total Sales	3600 Units
Selling Price per unit	Rs. 100
Variable cost per unit	Rs. 50
Fixed cost	Rs. 1,00,000

Q.4(II) What is a break-even chart? What is profit graph? State the purposes of constructing such charts. **12M**

Q.5(I) Calculate the payback period of the following projects, each requiring a cash outlay of Rs.1,00,000. Suggest which projects are acceptable if the standard payback period is 5 years. **12M**

Year	Cash Flows		
	Project-A	Project-B	Project-C
1	30,000	30,000	10,000
2	30,000	40,000	20,000
3	30,000	20,000	30,000
4	30,000	10,000	40,000
5	30,000	5,000	--

OR

Q.5(II) What do you mean by Capital Budgeting? Explain the various techniques of the capital budget **12M**

*** END ***

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COMPUTER NETWORKS

Time: 3Hrs   Max Marks: 60

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

Q.1(I)	a.	Explain data communications with neat diagram.	6M
	b.	Explain various types of network topologies with neat diagram.	6M

<div align="center">OR</div>

Q.1(II)	a.	Explain various types of networks with neat diagram.	6M
	b.	Explain the need of protocols and standards.	6M
Q.2(I)	a.	Difference between analog and digital signals.	6M
	b.	Explain line coding characteristics.	6M

<div align="center">OR</div>

Q.2(II)	a.	Explain guided and unguided media.	6M
	b.	Difference between TDM and FDM.	6M
Q.3(I)	a.	Explain the need of error detection and correction.	6M
	b.	Explain the evolution of Ethernet.	6M

<div align="center">OR</div>

Q.3(II)	a.	Explain the working mechanism of stop and wait ARQ.	6M
	b.	Write a note on virtual LANs.	6M
Q.4(I)	a.	Explain IPv4.	6M
	b.	Explain IPv6.	6M

<div align="center">OR</div>

Q.4(II)	a.	Write note on routing, static and dynamic routing tables	6M
	b.	Explain various types of routing protocols	6M
Q.5(I)	a.	Explain TCP with neat diagram.	6M
	b.	Explain client – server model with neat diagram.	6M

<div align="center">OR</div>

Q.5(II)	a.	Explain the working mechanism user datagram networks.	6M
	b.	Explain domain naming system.	6M

<div align="center">*** END***</div>