

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

Direct 2nd Year MCA- I Year I Semester Regular End Semester Examinations Feb/ Mar- 2015

ADVANCED DATABASE MANAGEMENT SYSTEM

Time: 3Hrs

Max Marks: 60

Note: 1. Attempt all the questions.

2. In Q.no 1 to 5 answer either I or II only.

- Q.1(I) a. Write a short notes on variables and control structures in PL/SQL 6m
 b. What is a trigger? Write a trigger to fire on update 6m

OR

- Q.1(II) a. What is a procedure? Write a procedure within and out parameter 6m
 b. Explain about embedded SQL 6m

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- Q.2(I) a. Define transaction. Draw and explain the transaction state diagram 6m
 b. Discuss about execution and recovery of work-flows 6m

OR

- Q.2(II) a. List and explain ACID properties 6m
 b. How transactions are managed in multi-databases? 6m

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- Q.3(I) a. Explain inheritance at level of type 6m
 b. Explain the languages used in querying and transformation 6m

OR

- Q.3(II) a. Explain inheritance at level of table 6m
 b. Write the application of XML 6m

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- Q.4(I) a. Write about statistical database security, with example 6m
 b. What are the types and levels of locks? 6m

OR

- Q.4(II) a. How to specify the limits on propagation of privileges? 6m
 b. Explain oracle's exception handlers 6m

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- Q.5(I) a. Explain any two of new database applications 6m
 b. Explain about Object Data Management Group (ODMG) 6m

OR

- Q.5(II) a. Write about spatial database concepts 6m
 b. What are the Standards for inter operability and integration? 6m

*** End***

Course Code: 14IMCA21T02

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DESIGN AND ANALYSIS OF ALGORITHMS

Time: 3Hrs

Max Marks: 60

Note: 1. Attempt all the questions.

2. In Q.no 1 to 5 answer either I or II only.

- Q.1(I)** a) Let $f(n)=a_m n^m + a_{m-1} n^{m-1} + a_{m-2} n^{m-2} + \dots + a_1 n + a_0$, where $a_m > 0$, be a degree- m polynomial in n . Then show that $f(n)=O(n^m)$. **6m**
- b) What is collision in hashing? Explain collision resolution techniques in hashing with suitable examples. **6m**

OR

- Q.1(II)** a) Define (binary) min heap. What is the height of a min heap with n elements? **6m**
- b) Sort the keys 5, 13, 2, 25, 7, 17, 20, 8 and 4 in ascending order by applying heap sort. **6m**

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- Q.2(I)** Define a Minimum Spanning Tree (MST)? With pseudo code and suitable example explain Prim's algorithm for finding MST of an undirected weighted graph. Analyze the running time of the Prim's algorithm if the priority queue is implemented as a binary heap and a Fibonacci heap data structure? **12m**

OR

- Q.2(II)** Give recurrence relations for the best and the worst case running times of Quick sort. Sort the keys H, L, P, T, W, G, E, C, A in ascending order by applying quick sort. **12m**
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- Q.3(I)** a) Give an optimization problem to which greedy method does not yield optimal solution but the dynamic programming method gives. **4m**
- b) Explain the dynamic programming formulation for job scheduling problem with deadlines. **8m**

OR

- Q.3(II)** Give a dynamic programming based algorithm to solve 0-1 knapsack problem and analyze its running time. Solve the following instance of knapsack problem by applying your algorithm. **12m**

Item No	Weight (Kg)	Profit (or) Value (Rs)
1	2	3
2	3	4
3	4	5
4	5	6

Knapsack capacity (W) = 5 Kg

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- Q.4(I)** Define chromatic number of a graph. What is the number of colors required to color the complete graph on n vertices. With an example explain backtracking algorithm to solve graph coloring problem. **12m**

OR

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- Q.4(II)** Consider an instance of the Travelling sales person's problem and solve it using LCBB. **12m**

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- Q.5(I)** Define the following terms:

- a) Decision Problem **3m**
- b) NP **3m**
- c) NP-hard **3m**
- d) NP-complete **3m**

OR

- Q.5(II)** Define Clique Decision Problem (CDP). Show that CDP is NP-complete. **12m**

***** End*****

COMPUTER NETWORKS

Time: 3Hrs

Max Marks: 60

Note: 1. Attempt all the questions.

2. In Q.no 1 to 5 answer either I or II only.

1(I) Discuss different categories of networks in detail 12m

OR

1(II) Explain about the seven layers in the OSI model 12m

2(I) Name three types of transmission impairment. 12m

OR

2(II) Discuss three different multiplexing techniques like FDM, WDM and TDM techniques. 12m

3(I) Compare high level data link control with point to point protocol. Which technique is byte oriented; which one is bit oriented. 12m

OR

3(II) a. Discuss about the virtual LANs 6m
b. Compare the data rates for the standard Ethernet, fast Ethernet and gigabit Ethernet. 6m

4(I) Briefly discuss about the ICMP protocol in detail. 12m

OR

4(II) Explain how a message can be unicast, broadcast and multicast. 12m

5(I) Discuss about the user data gram protocol. 12m

OR

5(II) Describe about the TCP protocol in detail. 12m

***** End*****

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ACCOUNTING AND FINANCIAL MANAGEMENT

Time: 3Hrs

Max Marks: 60

Note: 1. Attempt all the questions.

2. In Q.no 1 to 5 answer either I or II only.

Q.1(I) Discuss about the accounting concepts and conventions? 12m

OR

Q.1(II) From the following balances of an organization, Prepare a Trial balance as 31-12-2014 12m

Purchases	1,62,505
Sales	2,52,400
Reserve for bad and doubtful debts	5,200
Sundry debtors	50,200
Sundry creditors	30,526
Opening stock	26,725
Wages	23,137
Salaries	5,575
Furniture	7,250
Postage	4,226
Power and fuel	1,350
Trade expenses	5,831
Bad debts	525
Loan to Ram	3,000
Cash in hand	10,000
Trade expenses accrued, not paid	700
Bills payable	3,950
Drawings account	4,452
Capital account	10,000
Outstanding wages	2,000

Q.2(I) Discuss about the role of financial manager in an organization 12m

OR

Q.2(II) What is weighted average cost of capital? Discuss about its components. 12m

Q.3(I) What are different types of Ratios? Explain them in brief. 12m

OR

Q.3(II) What is funds flow statement? Discuss about the sources and application of funds. 12m

Q.4(I) What is Break-even point? Explain the managerial applications of Break-even point. 12m

OR

- Q.4(II)** Selling price per unit is Rs.20 **12m**
 Variable cost per unit is Rs16
 Fixed Expenses are Rs.60,000
 Calculate;
 i. P/V Ratio
 ii. Break even point
 iii. Margin of safety and
 iv. Profit if sales are 25000 units

- Q.5(I)** What is working capital? Discuss about various sources of working capital **12m**

OR

- Q.5(II)** A company is examining two mutually exclusive projects for new capital investment. Suggest which project is to be accepted according to Net Present Value method.. The details are as follows; **12m**

	Project-A Rs	Project –B Rs
Net cash outlay	50,000	60,000
Estimated life	5 years	6 years
Depreciation method	Straight line	Straight line
Tax rate	50%	50%
Cost of capital	10%	10%

Earnings before Depreciation and Tax;

1st year	13,000	12,000
2 nd year	15,000	16,000
3 rd year	18,000	18,000
4 th year	22,000	24,000
5 th year	12,000	24,000
6 th year	-----	20,000

P.V factor at 10 %;

Year;	1	2	3	4	5	6
PV factor	.909	.826	.751	.683	.620	.564

***** End*****

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PROGRAMMING TO PYTHON

Time: 3Hrs

Max Marks: 60

Note: 1. Attempt all the questions.

2. In Q.no 1 to 5 answer either I or II only.

- Q.1(I) a) Write in detail on structured programming and problem solving techniques. 6m
b) Solve for X in the following examples: i) $1234_X = 2322_8$ ii) $X_{16} = 46325_8$ iii) $3405_8 = X_3$ 6m

OR

- Q.1(II) a) Write in detail on software development life cycle.. 6m
b) Solve for X in the following examples: i) $5678_{10} = 13056_X$ ii) $4CD5_{16} = X_4$ 6m
iii) $3404_5 = X_3$

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- Q.2(I) a) Write briefly with an example on lambda functions in Python. 6m
b) Write a Python function sum(n) that returns the sum of all the numbers in the list n. 6m

OR

- Q.2(II) a) Write briefly on any 12 Python built-in functions with example usage. 6m
b) Write in detail on iteration, chained and nested conditionals. 6m

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- Q.3(I) a) Write in detail on String slices with examples. 6m
b) Write a Python program to copy a text file into destination file by copying each word onto a separate line. 6m

OR

- Q.3(II) a) Write in detail on List slices with examples. 6m
b) Write in detail on List and String methods with examples. 6m

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- Q.4(I) Write a Python program to develop and test a date class to perform date operations. 12m

OR

- Q.4(II) a) Write briefly on exception handling in Python with an example program. 6m
b) Write briefly on operator overloading with an example class in Python. 6m

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- Q.5(I) Write a Python function to evaluate a postfix expression using Stack. 12m

OR

- Q.5(II) Write a Python class to implement an improved linked queue. 12m

*** End***