

MADANAPALLE INSTITUTE OF TECHNOLOGY & SCIENCE, MADANAPALLE

(UGC-AUTONOMOUS)

Direct 2nd Year MCA I Year I Semester (R14) Supplementary End Semester Examinations – June 2016

(Regulations: R14)

ADVANCED DATABASE MANAGEMENT SYSTEMS

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 Part A or B only

- Q.1(A) i. What is 'Schema'? What are *three* types of schemas in a database system? 4M
ii. What is a 'Data Model'? What are different data models available? 5M
iii. What are Instance, Transaction and Query? 3M

OR

- Q.1(B) i. Distinguish between Physical Independence and Logical Independence? 3M
ii. What are the main components of database architecture and briefly explain what they do? 9M

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- Q.2(A) i. How to create, modify and delete tables in SQL? Exemplify. 4M
ii. What relational set operators SQL support? Provide an example for each. 4M
iii. What are Correlated and Sub Queries? Give an example for each in SQL. 4M

OR

- Q.2(B) i. 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. What is the total number of rows in the items_ordered table? 1M
b. Select item, price rounded to the nearest whole value and the item from the items_ordered table. 1M
c. Select item, maximum price, and minimum price for each specific item in the items_ordered table. Hint: Items have to be broken up into separate groups 2M
d. Select the lastname, firstname, and city for all customers in the customers table. Display the results in Ascending Order based on the lastname. 2M
e. Select the item and price of all items that start with the letters 'S', 'P', or 'F'. 2M
f. Select the date, item, and price from the items_ordered table for all of the rows that have a price value ranging from 10.00 to 80.00. 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. 2M

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- Q.3(A) i. What problems are caused by redundantly storing information? 4M
ii. What is the motivation for putting a relation in BCNF, in 3NF? Define 3NF and BCNF with an example for each. What are benefits of 3NF and BCNF? 8M

OR

- Q.3(B) i. What is 'Decomposition'? What problems does a given decomposition cause? Give a necessary and sufficient condition to test whether decomposition is loss-less join. 8M
ii. Define 4NF and 5NF. 4M
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- Q.4(A) i. What is 'Thrashing'? What should a DBA do if the system thrashes? How can throughput be increased? 6M
ii. Describe the *three* steps in ARIES method. 6M

OR

- Q.4(B) i. Why does a DBMS interleave transactions? What kinds of anomalies can interleaving transactions cause? 6M
ii. How does Strict 2PL ensure serializability and recoverability? 6M

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- Q.5(A) i. Describe how Search, Insert and Delete operations work in ISAM. 10M
ii. Define 'Distributed Data Independence' and 'Transaction Atomicity'. 2M

OR

- Q.5(B) i. Why is recovery in a Distributed DBMS more complicated than a Centralized system? 4M
ii. What are various strategies for computing Joins in a Distributed DBMS? 3M
iii. Discuss about Deadlock Detection in a Distributed Database. 5M

***** END*****

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Direct 2nd Year I Year I Semester Supplementary End Semester Examinations – June 2016
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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 Part A or B only

- Q.1(A) i. Define time complexity and space complexity? Explain the procedure to calculate time & space complexities of algorithm. 12M
ii. Describe about asymptotic notations.

OR

- Q.1(B) Write down in detail the concept of Hashing in algorithms. 12M

- Q.2(A) i. Explain the control abstraction of Divide & Conquer in detail 12M
ii. Find the maximum & minimum items using divide and conquer for the following elements 22 , 13 , -5 , -8 , 15 , 60 , 17 , 31 , 47 .

OR

- Q.2(B) i. Define minimum spanning tree? Explain the concept of finding the minimum spanning tree using Kruskal's algorithm. 12M
ii. Illustrate the optimal storage methodology on tapes based on greedy method.

- Q.3(A) i. Define Dynamic programming. Discuss the 0/1 knapsack problem in detail with an example. 12M
ii. What is a multistage graph? How Dynamic Programming can be applied to solve multistage graph problems?

OR

- Q.3(B) Define traversing in the graph . Describe different graph traversal techniques 12M

- Q.4(A) i. Define Backtracking. Discuss in detail the 8 queen problem with an example. 12M
ii. What is hamiltonian cycle? Describe it using backtracking method.

OR

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

	V1	V2	V3	V4	V5
V1	∞	20	30	10	11
V2	15	∞	16	4	2
V3	3	5	∞	2	4
V4	19	6	18	∞	3
V5	16	4	7	16	∞

- Q.5(A) Explain COOK'S THEOREM in detail. 12M

OR

- Q.5(B) i. Discuss: Clique Decision Problem (CDP). 12M
ii. Explain Job Shop Scheduling problem.

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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 Part A or B only

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|-----------|-----|------------------------------------------------------------------|----|
| Q.1(A) | i. | Explain OSI model and functions of layers. | 6M |
| | ii. | Explain LAN, WAN, MAN with neat diagram. | 6M |
| OR | | | |
| Q.1(B) | i. | Explain data communications in computer networks. | 6M |
| | ii. | Explain TCP model. | 6M |
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| Q.2(A) | i. | Explain the differences between synchronous and statistical TDM. | 6M |
| | ii. | Write a note on telephone modem. | 6M |
| OR | | | |
| Q.2(B) | i. | Explain the difference between guided and unguided media. | 6M |
| | ii. | Explain in detail about line coding. | 6M |
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| Q.3(A) | i. | Explain cyclic redundancy check. | 6M |
| | ii. | Explain the working mechanism of stop and wait ARQ. | 6M |
| OR | | | |
| Q.3(B) | i. | Write a note on virtual LANs. | 6M |
| | ii. | Explain select and repeat ARQ. | 6M |
| <hr/> | | | |
| Q.4(A) | i. | Difference between IPv4 and IPv6. | 6M |
| | ii. | How to identify class A, B, C, D address in IPv4. | 6M |
| OR | | | |
| Q.4(B) | i. | What is the need of routing tables, explain with an example. | 6M |
| | ii. | Explain uni-cast and multi-cast routing protocols. | 6M |
| <hr/> | | | |
| Q.5(A) | i. | Explain FTP with neat diagram. | 6M |
| | ii. | Explain briefly about user datagram. | 6M |
| OR | | | |
| Q.5(B) | i. | Explain client-server model. | 6M |
| | ii. | Explain the need of DNS. | 6M |

*** END***

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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 Part A or B only

- Q.1(A) i) Differentiate between Hard ware and software. 12M
ii) How to create and run a program in Python? Explain with an example.
- OR**
- Q.1(B) What are the steps involved in top down and bottom up approaches? Explain. 12M
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- Q.2(A) List out various keywords and explain them with example. 12M
- OR**
- Q.2(B) i) Write a program to find whether a given number is even or odd. 12M
ii) Explain various looping statements with examples.
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- Q.3(A) i) What is string slices? Explain with example. 12M
ii) Explain List operations.
- OR**
- Q.3(B) Define recursion. Explain how to perform stack operations with recursion using an example. 12M
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- Q.4(A) List user defined types and explain with example. 12M
- OR**
- Q.4(B) Explain different types of inheritance with examples. 12M
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- Q.5(A) Explain all stack operations with an algorithm. 12M
- OR**
- Q.5(B) What is Queue ADT? Explain Priority Queue. 12M

***** END*****

Hall Ticket No:

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Course Code: 14IMCA21T04/14HUM403

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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 Part A or B only

Q.1(A) "The agreement of a Trial Balance is not a conclusive proof as to the accuracy of the books." Explain 12M

OR

Q.1(B) Define Accounting and explain its concepts. 12M

Q.2(A) Define Financial Management. Explain its functions 12M

OR

Q.2(B) X company Ltd. used capacity is 400 units whose selling price unit is Rs.10, variable cost is Rs.6. Calculate the operating leverage when,

- i) The fixed cost Rs.400
- ii) The fixed cost Rs.1,000
- iii) The fixed cost Rs.1,200

Q.3(A) Define Ratio. Explain its classification and limitations 12M

OR

Q.3(B) From the following information, calculate: 12M

- i) Current Assets
- ii) Current Liability
- iii) Inventory

Current Ratio = 2.8

Liquidity Ratio = 1.5

Working Capital = Rs.90,000

Q.4(A) From the following information calculate Break Even Point 12M

Budgeted output 80,000 units

Fixed expenses Rs.4,00,000/-

Variable expenses per unit Rs.10/-

Selling price per unit Rs.20/-

If the selling price is reduced to Rs.18 per unit, what will be new BEP?

OR

Q.4(B) Define Cost of capital. Explain its need and importance in decision making. 12M

Q.5(A) From the following capital structure of a company, calculate the overall cost of capital; using (a) book value weights and (b) market value weights.

Source	Cost of Capital-%	Book Value	Market Value
Equity Share Capital (Rs.10 shares)	14	45000	90000
Retained earnings	13	15000	
Preference share capital	10	10000	10000
Debentures	5	30000	30000

OR

Q.5(B) Raja Co. Ltd., whose cost of capital is 10 per cent, is considering two mutually exclusive projects, P and Q the details of which are: 12M

Year	P	Q
0	70000	70000
1	10000	50000
2	20000	40000
3	30000	20000
4	45000	10000
5	60000	10000
Total	165000	130000

Compute the NPV, P.I., and IRR for the two Projects.

*** END***