

Reg. No. :

D 1119

Q.P. Code : [07 DMCA 01]

(For the candidates admitted from 2007 onwards)

M.C.A. DEGREE EXAMINATION, DECEMBER 2010.

First Year

COMPUTER ORGANIZATION AND ARCHITECTURE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

Each question carries 20 marks.

(5 × 20 = 100)

1. Convert the following representation from one number system to the other system.

(a) $(41.6875)_{10}$ to binary

(b) $(153.513)_{10}$ to octal

(c) $(1365F)_{16}$ to decimal

(d) $(630.4)_8$ to decimal.

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2. Simplify the following Boolean expression using Karnaugh map method and find the complement of F .

$$F(A, B, C, D) = \sum(1, 3, 7, 11, 15)$$

$$d(A, B, C, D) = \sum(0, 2, 5).$$

3. Write short notes on the following :

- (a) Multiplier
- (b) Demultiplexer
- (c) Decoder
- (d) Encoder.

4. With a neat logic diagram and timing diagram explain the hashing principle of BCD ripple counter.

5. Discuss in detail the different addressing modes with relevant example.

6. Briefly explain about the different program control instructions available.

7. Explain the process of asynchronous data transfer and elaborate on strobe and handshaking methods.

8. Elaborate on the following cache memory mapping technique.

- (a) Associative mapping
- (b) Direct mapping
- (c) Set-associative mapping.

D 1120

Q.P. Code : [07 DMCA 02]

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M.C.A. DEGREE EXAMINATION, DECEMBER 2010.

First Year

PROBLEM SOLVING IN C AND DATA STRUCTURES

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

Each question carries 20 marks.

(5 × 20 = 100)

- (a) Discuss various types of operators available in C. (10)

(b) Give the syntax for printf() and fprintf(). (5)

(c) Write the advantages of structured programming. (5)
- (a) Define FILE data structure. Write a C program for merging of two files using C language. (10)

(b) Define Recursion. Write a C program to find factorial using recursion. (10)

8. Write short notes on following :
- (a) Storage classes
 - (b) All pair shortest path algorithm
 - (c) Pointers
 - (d) Self referential structures.

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3. (a) Give any five characteristics of an algorithm. (5)
- (b) Convert the following infix to postfix notation.
- (i) $(a + (b * d) + 3) \wedge 7$ (10)
 - (ii) $(a * a + (A + d) + 3) + 10$. (10)
- (c) How sparse matrix is represented using linked list. (5)
4. (a) Explain any two applications of Binary tree. (10)
- (b) Write the procedure for Doubly Linked List. (10)
5. (a) Explain transitive closure of a graph with an example. (10)
- (b) Discuss binary tree traversal techniques. (10)
6. Write Quick sort procedure. Using Quick sort arrange the following numbers in ascending order 10, 100, 23, 34, 13, 22, 11, 30, 35, 36. Show its necessary time complexity. (20)
7. Explain Different types of algorithm analysis techniques with an example. (20)

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D 1121

Q.P. Code : [07 DMCA 03]

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M.C.A. DEGREE EXAMINATION, DECEMBER 2010.

First Year

RELATIONAL DATABASE MANAGEMENT SYSTEM

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

Each question carries 20 marks.

(5 × 20 = 100)

- (a) Compare file processing systems with database system. (10)

(b) Define entity, relationship, super key, candidate key, and foreign key. (10)
- (a) Explain DBMS architecture with neat block diagram. (10)

(b) Draw E-R Diagram for bank ATM system. (10)
- Explain various operations of Relational algebra with suitable example. (20)

- (a) Explain view, synonym, index and sequence with an example. (10)

(b) What are the SQL triggers? Give an example. (10)
- (a) Explain ACID properties of transaction management in detail. (10)

(b) Define 1NF, 2NF, 3NF, 4NF, 5NF. (10)
- (a) Explain two phase locking protocol in detail. (10)

(b) Write short notes on database security. (05)

(c) What is serializability? (05)
- (a) Discuss any one data recovery mechanism with an example. (10)

(b) Describe concurrency control mechanism in database management. (10)
- Write short notes on following :

(a) Join dependency (5)

(b) Relational calculus (5)

(c) Parallel databases (5)

(d) OODBMS. (5)

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D 1122 **Q.P. Code : [07 DMCA 04]**

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M.C.A. DEGREE EXAMINATION, DECEMBER 2010.

First Year

**ANALYSIS AND DESIGN OF INFORMATION
SYSTEM**

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

Each question carries 20 marks.

(5 × 20 = 100)

1. Consider Hospital Management System, analyze and state the various types of information that are to be managed and maintained. And also explain the managing structure and their functionalities.
2. With a neat diagram, explain the various phases involved in designing an information system.
3. (a) Explain the various types of information gathering methods for computerizing the environment.
(b) State the necessity and guidelines for interviewing.

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4. Briefly explain the various steps involved in system and feasibility analysis.
5. Draw and explain the Data flow diagram for computerized banking system. Name all data flows, processes and data stores and also indicate system inputs and outputs.
6. (a) Explain the various process specification methods.
(b) How K-maps are used to detect logical errors in decision tables? Explain.
7. (a) State the objectives of designing input and output specifications.
(b) Briefly discuss about input validation.
8. (a) In what ways does an audit trail safeguard both data and organization in an online banking system? Explain.
(b) What are the different levels of system testing? Explain each.

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M.C.A. DEGREE EXAMINATION, DECEMBER 2010.

First Year

OPERATING SYSTEM

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

Each question carries 20 marks.

(5 × 20 = 100)

1. (a) List out the various advantages and disadvantages of mainframe systems. (10)
- (b) Write short notes on virtual machines. (10)
2. (a) Discuss different process states. (10)
- (b) Compare shared memory and Inter process communication. (5)
- (c) Give the important features of Real time operating systems. (5)
3. Explain different CPU scheduling algorithms with an example. (20)

4. (a) What are the important characteristics of Deadlock? (5)
- (b) Explain how banker's algorithm is used to avoid deadlock? (15)
5. (a) Explain Paging memory management in detail. (10)
- (b) Discuss any one page replacement algorithm with an example. (10)
6. (a) Define seek time and latency time (5)
- (b) Discuss any three disk scheduling algorithms with suitable example. (15)
7. (a) Write short notes on file accessing methods. (10)
- (b) What is directory structure? Explain DAC file structure in detail. (10)
8. Write short notes on following.
 - (a) File recovery. (5)
 - (b) Shell programming. (5)
 - (c) Windows 2000. (5)
 - (d) SPOOLING. (5)

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