

Reg. No. : .....

D 2501

Q.P. Code : [07 DMCA 01]

(For the candidates admitted from 2007 onwards)

M.C.A. DEGREE EXAMINATION, MAY 2014.

First Year

COMPUTER ORGANIZATION AND  
ARCHITECTURE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

Each questions carries equal marks.

(5 × 20 = 100)

1. (a) Convert the following : (10)
  - (i)  $(145)_{10} = (?)_2$
  - (ii)  $(12B)_{16} = (?)_8$
- (b) Implement the function  
 $f(x_1, x_2, x_3) = \sum m(1, 3, 5, 7)$  using NAND  
gates only. (10)
2. Explain how you convert sum of the products into  
product of sums. Give with example. Also  
minimize the following function.  
 $F = (0, 2, 4, 8, 9, 12, 14)$

3. (a) Explain the use of a shift register in the design of sequential circuits in detail. (10)  
(b) Draw the truth table and construct a full adder with the help of a universal gate. (10)
  4. Discuss the applications of JK flip flop and RS flop with truth table and logic diagram.
  5. What is an addressing mode? Explain various addressing modes for a processor with examples.
  6. Describe in brief the different modes by which data transfer can take place between a computer unit and its I/O devices.
  7. Explain the role of the cache memory in memory hierarchy to speed up instruction execution time.
  8. What is virtual memory? Explain how the virtual memory address is translated to physical address in main memory.
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D 2502

Q.P. Code : [07 DMCA 02]

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M.C.A. DEGREE EXAMINATION, MAY 2014.

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)

1. (a) Explain the various primary data types in C. (10)
- (b) Write a program using conditional operators to determine whether a year entered through the keyboard is a leap year or not. (10)
2. (a) What are formatted input and output statements in C? Give suitable examples. (10)
- (b) Differentiate between for loop and a while loop. Discuss the usage of each. (10)

3. (a) List out the various storage class available in C and explain any two of them. (10)
- (b) Explain pointers to functions and structures giving examples for each. (10)
4. (a) What is the relationship between formal arguments and actual arguments? How they can be declared within a function? (10)
- (b) How is an array name interpreted? When it is passed to a function? Explain with example. (10)
5. (a) How can an entire structure be passed to a function and returned from a function? Discuss in detail manner. (10)
- (b) Define recursion. Write a C program to find factorial number using Recursion. (10)
6. (a) Write ADT operations for array implementation of queue. (10)
- (b) Write the algorithm to evaluate arithmetic expression using stack. (10)
7. (a) How do you represent a single list in memory? Explain with example the basic operations performed on a single linked list. (10)
- (b) Explain the various representations of a graph in memory with suitable example. (10)

8. (a) Discuss the various representation of binary tree in memory with examples. (10)
- (b) What are the basic operations that can be performed on a binary tree? Explain with examples. (10)
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**D 2503**

**Q.P. Code : [07 DMCA 03]**

(For the candidates admitted from 2007 onwards)

M.C.A. DEGREE EXAMINATION, MAY 2014.

First Year

Computer Applications

**RELATIONAL DATABASE MANAGEMENT  
SYSTEMS**

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

Each question carries 20 marks.

(5 × 20 = 100)

1. Explain the following :
  - (a) Data dictionary
  - (b) Data redundancy
  - (c) Atomicity and Durability
  - (d) Logical data independence. (20)
2. (a) Write short notes on Transaction management. (10)
  - (b) What are the disadvantages of File systems? (10)

3. (a) Compare physical data independence and logical data independence. (10)
- (b) Explain the following with an example.
- (i) Primary key
- (ii) Foreign key. (10)
4. Explain Entity – Relationship diagram with an example. Give its advantages and disadvantages. (20)
5. Discuss various queries and triggers available SQL. Give an example. (20)
6. Write short notes on following :
- (a) Transaction Schedule
- (b) Performance of locking. (20)
7. (a) Discuss various parallel architecture in detail. (10)
- (b) Describe various specialized locking techniques in detail.
8. Write short notes on following :
- (a) Join dependency (5)
- (b) Multi value dependency (5)
- (c) Inheritance (5)
- (d) ORDBMS. (5)

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D 2504

Q.P. Code : [07 DMCA 04]

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M.C.A. DEGREE EXAMINATION, MAY 2014.

First Year

ANALYSIS AND DESIGN OF INFORMATION  
SYSTEMS

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

Each question carries 20 marks.

(5 × 20 = 100)

1. (a) Discuss about the types of information. (10)  
(b) Explain the need for computer based information system. (10)
2. (a) Define the term "Information system" . Explain the factors accounting for the success of information system. (2+6)  
(b) Explain management structure. (6)  
(c) Discuss about qualities of information. (6)
3. (a) What are the different data collection methods? Explain them in detail. (15)  
(b) Discuss about the attributes of a system analyst. (5)



4. (a) Write an elaborate note on system requirements specification. (10)
  - (b) Explain about technical and operational feasibilities. (10)
  5. (a) Distinguish between flow chart and DFD. (10)
  - (b) Draw and explain the DFD for student information system. (10)
  6. (a) Explain the use of structure English for process specification with an example. (10)
  - (b) How to detect logical errors in decision tables? Explain. (10)
  7. (a) Explain the methods of data validation and data verification. (10)
  - (b) Explain the objectives of output design. (10)
  8. (a) Discuss about various coding techniques for information system. (10)
  - (b) Explain the process of testing an information system. (10)
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**D 2505**

**Q.P. Code : [07 DMCA 05]**

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M.C.A. DEGREE EXAMINATION, MAY 2014.

First Year

**OPERATING SYSTEM**

Time : Three hours                      Maximum : 100 marks

Answer any FIVE questions.

Each question carries 20 marks.

(5 × 20 = 100)

1. Discuss the following :
  - (a) Time sharing system.
  - (b) System programs.
  - (c) Multitasking.
  - (d) RTOS.
2.
  - (a) Explain process control block in detail. (10)
  - (b) List out the various functions of medium term schedulers. (10)
3. Explain the following :
  - (a) Monitors.
  - (b) Semaphores.

4. Write the procedure for Dining philosophers classical problem. How it is solved using monitors?
5. (a) What are the characteristics of Deadlock?(10)  
(b) Compare wait for graph and resource allocation graph. (10)
6. Explain the following scheduling algorithm with an example.
  - (a) FCFS
  - (b) SJF
  - (c) Priority scheduling
  - (d) Round Robin algorithm.
7. (a) Discuss segmentation memory management in detail. (10)  
(b) Write short notes on free space management techniques. (10)
8. (a) Explain look and scan disk scheduling algorithm with a example.  
(b) Write short notes on following :
  - (i) Shell programming.
  - (ii) Windows operating system.