

Reg. No. :

D 2689

Q.P. Code : [07 DDCA 01]

(For the candidates admitted from 2007 onwards)

P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2014.

DIGITAL COMPUTER FUNDAMENTALS AND
COMPUTER ARCHITECTURE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Convert the binary number 1001.0010 to decimal. (3)
- (b) Convert decimal 39 into excess 3 code. (3)
- (c) Explain the subtraction of binary numbers using 1's and 2's complement with example. (9)
- (d) Perform the subtraction.
01010101-00111100. (5)
2. (a) Using truth table prove or disprove the following: $D A B BC (: + B) + (C + AD) D+$. (10)
- (b) What is the differences between canonical form and standard form? Explain. (10)

3. Draw a neat diagram for a 4 bit adder/subtractor circuit. (20)
4. Discuss the following in detail:
 - (a) Shift-registers. (10)
 - (b) Multiplexers. (10)
5. (a) Design a '4 bit combinational logic shifter. (10)
 - (b) Explain the different types of instruction formats with examples. (10)
6. Design a counter with the following repeated binary sequence: 0, 1,2,3,4, 5, 6. use JK Flip-flop. (20)
7. (a) What is the difference between memory-mapped I/O and isolated I/O? Explain. (10)
 - (b) If a process may be dynamically assigned to different locations in main memory, what is the implication for the addressing mechanism? Explain. (10)
8. Design a finite state machine that takes two inputs, A and B, and generates one output, Z. The output in cycle n, Z_n , is either the boolean AND or the boolean OR of the corresponding A_n and the previous input A_{n-1} , depending on the other input, B_n :

$$Z_n = A_n \cdot A_{n-1} \text{ if } B_n = 0$$

$$Z_n = A_n + A_{n-1} \text{ if } B_n = 1$$
 After designing, sketch an implementation of the finite statemachine using D flip-flops. (20)

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Q.P. Code : [07 DDCA 02]

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**P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2014.**

DATA STRUCTURES USING 'C'

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

All questions carry equal marks.

1. Explain in detail about data types with example.
2. Discuss with example types of operators in 'C'.
3. Describe in detail about Pre-processor directives with example.
4. (a) Write an algorithm for to read ten integers in an array and find the number of even and odd numbers in it.
(b) Briefly discuss about pointers with example.

5. (a) Write short notes on
 - (i) Nested Structure
 - (ii) Array of Structures
 - (b) Discuss in detail about command line arguments.
 6. What is stack? Discuss what are the operations on stack with example.
 7. (a) Write an algorithm to perform insertion, deletion operation in a Binary search tree.
 - (b) Write an algorithm to count the number of nodes in a given singly linked list.
 8. (a) Describe in detail about Quick Sort.
 - (b) Compare the advantage and disadvantage of bubble sort and selection sort.
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Q.P. Code : [07 DDCA 03]

**P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2014**

OPERATING SYSTEMS

Time : Three hours

Maximum : 100 marks

Answer any FIVE question.

All questions carry equal marks.

(5 × 20 = 100)

1. (a) Write short note on early operating system. (10)
- (b) List out the various process states and briefly explain with a state diagram. (10)
2. List out the various types of semaphores with suitable examples. (20)
3. Write a brief note on the following :
 - (a) Fixed partition multiprogramming. (5)
 - (b) Variable partition multiprogramming. (5)
 - (c) Contiguous allocation. (5)
 - (d) Non Contiguous allocation. (5)

4. Give the difference between pre-emptive and non pre-emptive scheduling? Explain any two scheduling with example. (20)
5. What is meant by distributed computing? Discuss the various design issues of distributed computing in detail. (20)
6. (a) Discuss on the following disk scheduling algorithms :
(i) Shortest Seek Time First (5)
(ii) First Come first served (5)
(iii) SCAN. (5)
(b) Discuss briefly about file organization. (5)
7. (a) Describe memory and system protection requirements in multiprogramming and time sharing systems. (10)
(b) What are real time operating systems? How they are developed and implemented? Illustrate some applications where they can be used? (10)
8. (a) Describe in detail about free-space management of file systems. (10)
(b) Illustrate the system view of MS-DOS operating system. (10)

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Q.P. Code : [07 DDCA 04]

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**P.G. DIPLOMA IN COMPUTER APPLICATIONS
EXAMINATION, MAY 2014**

SOFTWARE ENGINEERING

Time : Three hours

Maximum : 100 marks

Answer any FIVE question.

All questions carry equal marks.

(5 × 20 = 100)

1. (a) Define software engineering. What are the characteristics of software.
(b) Discuss in detail about software myth.
2. What are the functions of Requirements engineering? Discuss in detail.
3. Explain Data Modeling with suitable example.
4. What are the principles to be adopted in the software design process? Explain in detail.
5. Explain in detail about the Golden rules to be followed in designing user-interfaces.

6. With a suitable example, illustrate how transform mapping is carried out.
 7. What is system testing ? Discuss about its types.
 8. Define Software Quality ? Discuss in detail about the activities of SQA.
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