

Reg. No. :

D 1137

Q.P. Code : [07 DDCA 01]

(For the candidates admitted from 2007 onwards)

P.G.D.C.A. EXAMINATION, DECEMBER 2010.

DIGITAL COMPUTER FUNDAMENTALS AND
COMPUTER ARCHITECTURE

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Explain the subtraction of binary numbers using 1's and 2's complement with suitable examples. (8)
 - (b) Convert $(10110.0101)_2$ to decimal. (3)
 - (c) Convert $(26.24)_8$ to decimal. (3)
 - (d) Using 2's complement subtraction method find $(11011-11001)$ and $(110100-10101)$. (6)
2. (a) Explain semiconductor memory. (10)
 - (b) Draw the digital logic circuit for the following expression : (10)
 - (i) $AB' + BC' + B'C'$
 - (ii) $(AB + A'B')(CD' + C'D)$.

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3. With neat diagram and truth table explain encoder and decoder. (20)
4. With neat diagram explain 4-bit serial-in-serial-out shift register. (20)
5. (a) Explain stack organisation in CPU. (10)
- (b) Explain register transfer logic and operation in CPU. (10)
6. Explain all peripheral devices. (20)
7. (a) Explain virtual memory (10)
- (b) Explain DMA. (10)
8. Simplify the following expression by POS method
 $AC + B'D + A'CD + ABCD$. (20)

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DATA STRUCTURES USING 'C'

Time : Three hours

Maximum : 100 marks

Answer Five questions out of Eight questions.

(5 × 20 = 100)

- (a) What is an abstract data type? Mention the need for the data structures. (10)

(b) Explain the various data types supported by C language. (10)

(c) What are ternary operators? Give suitable example. (5)
- Write a C program to perform the following operations using 2D arrays.

(a) Matrix multiplication (10)

(b) Print the row sum and column sum for the given matrix. (10)

- (a) Explain how records using UNION concept are declared, stored and manipulated? (10)

(b) What is a pointer? Mention its advantages. (10)
- (a) Differentiate between functions and macros. (5)

(b) What is a stack? Explain how push and pop operations are implemented. (15)
- Trace the steps of insertion sort for the elements 22, 25, 70, 75, 89, 90, 95, 102, 123. (20)
- Explain binary search algorithm with suitable example. (20)
- (a) Explain switch statement with example. (10)

(b) What are ternary operators? Give suitable example. (5)

(c) With suitable example, explain continue and break statements. (5)
- Write a C program to delete the duplicate elements present in a doubly linked list. (20)

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OPERATING SYSTEMS

Time : Three hours

Maximum : 100 marks

Answer any FIVE questions.

(5 × 20 = 100)

1. (a) Describe in detail the concepts of Context switching and Thread. List the difference between them. (12)
- (b) Explain in detail about PCB. (8)
2. Discuss the various page replacement algorithms in virtual storage with suitable examples. (20)
3. Explain in detail the principles of contiguous and non-contiguous storage allocation. (20)
4. Write short notes on :
 - (a) Deadline scheduling (5)
 - (b) Shortest Job First Scheduling (SFS) (5)
 - (c) Shortest Remaining Time (SRT). (5)
 - (d) Least Total Processing Time (LTPT). (5)

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5. (a) Explain the operation of moving head disk storage in detail. (10)
- (b) Discuss elaborately the need for disk scheduling. (10)
6. (a) Describe the concepts of file allocating and freeing space detail. (10)
- (b) Explain the different organization of file system. (10)
7. (a) List the classification of sequential and parallel processing. (10)
- (b) Discuss the concepts of fault tolerance in detail. (10)
8. (a) Explain the user view's of MS-DOS in detail. (10)
- (b) Describe in detail about the process management in UNIX system. (10)

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Q.P. Code : [07 DDCA 04]

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SOFTWARE ENGINEERING

Time : Three hours

Maximum : 10 marks

Answer any FIVE out of Eight questions.

(5 × 20 = 100)

1. Define Software Engineering. Discuss in detail with software crisis and software myths.
2. Describe requirement analysis and specification.
3. Explain effective modular design.
4. Discuss in detail about mapping requirements into a software architecture.
5. (a) Describe software testing techniques and testing fundamentals.
(b) List any two testing tools.
6. Distinguish white box testing and black box testing.

7. Explain control structure testing and paths testing.

8. (a) Write brief notes on the reverse engineering and taxonomy of case tools.

(b) Write short notes software re-engineering process.

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