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Model Question Paper

Entrance Examination for Ph.D Admission(March 2012)

Part –I (Objective Questions)

(10x1=10) Marks

1. Which of the following Addressing modes are suitable for program Relocation at Runtime.
 1. Absolute Addressing
 2. Based Addressing
 3. Relative Addressing
 4. Indirect Addressing

a) 1 & 4 b) 1 & 2 c) 2 & 3 d) 1, 2 & 4

2. A CPU has 24-bit instructions. A Program starts at 300 (in decimal). Which one of the following is a legal program counter (all values in decimal).

a) 400 b) 500 c) 600 d) 700

3. What would be the worst case time complexity of the insertion sort algorithm, if the inputs are restricted to permutations of $1 \dots n$ with at most n inversions.

a) $O(n^2)$ b) $O(n \log n)$ c) $O(n^{1.5})$ d) $O(n)$

4. To implement Dijkstra's Shortest Path algorithm on unweighted Graphs so that it runs in linear time, then data structure to be used is:

a) Queue b) Stack c) Heap d) B-Tree

Part – II (5 Mark Questions)

(6x5=30) Marks

1. Explain Demorgan's law
2. Design a Counter, using only JK Flip Flops, AND Gates and OR Gates which counts in the following sequence

0	0	0	} this repeats
0	1	0	
0	1	1	
1	0	0	

0	0	0
0	1	0
0	1	1
1	0	0
0	0	0
.	.	.
.	.	.
.	.	.

3. Illustrate the operations of Insertion and Deletion in BST.
4. Write an algorithm to multiply two polynomials of different order using Singly Linked List.

Note :

Candidates shall expect the questions form the following subjects:

1. Digital Fundamentals
2. Computer Architecture
3. Operating Systems
4. Data Structures and Algorithms
5. Database Management Systems
6. Computer Networks