Unit-1

(Short question)

Q1 Give an array A[6][6] whose first element is stored at location 100. Calculate the location A[2][5] if each element occupies 4 bytes and array is stored row wise.

Q2 Arrange the following functions in the increasing order of asymptotic complexity.

f1(n) = 2^n

f2(n) = n^(3/2)

f3(n) = nLogn

f4(n) = n^(Logn)

Q3 How many instructions are executed when we multiply n × m matrix A with m × r matrix B?

Q4 for a single dimensional array if base address is 2000. Find the 6th index element's address. If a data stored in this array needs only 3 bytes.

Q5 What is the time complexity of following code:

```
int a = 0;
for (i = 0; i &lt; N; i++) {
   for (j = N; j &gt; i; j--) {
      a = a + i + j;
   }
}
```

(Long question)

Q6. Explain Asymptotic Notations with example.

Q7. Differentiate Singly, doubly, circular linked list with example.

Q8. Write an algorithm to get the nth element stored in a singly linked list.

Q9. Write an algorithm to implement Binary search and linear search.

Q10. How to represent the polynomial using linked list? Write a C program to add two polynomials using linked list.