What is the output of the C program given below?

```
#include <stdio.h>
int main()
{
char str1[ ] = "NPTEL";
char str2[ ] = {'P', 'R', 'O', 'G', 'R', 'A', 'M', 'M', 'I', 'N', 'G'};
int n1 = sizeof(str1)/sizeof(str1[0]);
int n2 = sizeof(str2)/sizeof(str2[0]);
printf("n1 = %d, n2 = %d", n1, n2);
return 0;
}
```

a) n1 = 9, n2 = 10
b) n1 = 6, n2 = 11
c) n1 = 7, n2 = 12
d) n1 = 6, n2 = 10

Answer: b

Bisection method is used to find

a) Derivative of a function at a given point
b) Numerical integration of a function within a range
c) The root of a function
d) None of the above

a) Option (a)
b) Option (b)
c) Option (c)
d) Option (d)

Answer: c

In ……, the search starts at the beginning of the list and checks every element in the list.

a) Linear search
b) Binary search
c) Hash search
d) Binary tree search

a) Option (a)
b) Option (b)
c) Option (c)
d) Option (d)

Answer: a

What is the worst-case complexity of bubble sort?

a) O(N log N)
b) O(log N)
c) O(N)
d) $O(N^2)$

a) Option (a)
b) Option (b)
c) Option (c)
d) Option (d)

Answer: d

What maximum number of comparisons can occur when a bubble sort is implemented? Assume there are n elements in the array.

a) (1/2) (n-1)
b) (1/2) n(n-1)
c) (1/4) n(n-1)
d) None of the above

a) Option (a)
b) Option (b)
c) Option (c)
d) Option (d)

Answer: b

What are the correct intermediate steps of the following data set when it is being sorted with the bubble sort? 7,4,1,8,2

a) 4,7,1,8,2→4,1,7,2,8→4,1,2,7,8→1,4,2,7,8→1,2,4,7,8
b) 4,7,1,8,2→4,1,7,8,2→4,1,7,2,8→1,4,7,2,8→1,4,2,7,8→1,2,4,7,8
c) 4,7,1,8,2→1,4,7,8,2→1,4,2,7,8→1,2,4,7,8
d) 4,7,1,8,2→4,7,1,2,8→1,4,7,2,8→1,4,2,7,8→1,2,4,7,8

a) Option (a)
b) Option (b)
c) Option (c)
d) Option (d)

Answer: b

Which of the following statement is correct for the 2 arrays with respect to A and B.

```
int *x[5];
int *(y[5]);
```

A. Array of pointers
B. Pointer to an array

a) x is A, y is B
b) x is A, y is A
c) x is B, y is A
d) y is B, y is B

a) Option (a)
b) Option (b)
c) Option (c)
d) Option (d)

Answer: b

Find the output of the following program

```
#include <stdio.h>
int main()
{
   int *ptr, a = 5;
   ptr = &a;
   *ptr  =*ptr - 3;
   printf("%d,%d ", *ptr, a);
   return 0;
}
```

Answer: 2,2

What is the solution of the equation given below using the Bisection Method up to four decimal places? (Consider the root lying on positive quadrant only and compute the root till five iterations only)

$$f(x) = xe^{2x} - 3x^2 - 5$$

Answer: 1.0312

What will be the output?

```
#include <stdio.h>
int main(void)
{
int a[ ] = {10, 12, 6, 7, 2};
int i, *p;
p=a+4;
for(i=0; i<5; i++)
printf("%d ", p[-i]);
return 0;
}
```

a) 10 12 6 7 2
b) 10 12 6 7
c) 2 7 6 12
d) 2 7 6 12 10

Answer: d