Name-Surname:
Std ID:
Duration: 40 minutes

1. **(10 pts.)** The list of tennis players is declared and initialized in a string array named `topten`. The following program segments in each part are executed. Write the output of each.

```
int i;
char topten[10][12] = { "Nadal", "Djokovic", "Wawrinka", "Ferrer", "Berdych", "Murray",
"Potro", "Federer", " Gasquet", "Tsonga" };
```

a)
```
for ( i = 9; i >= 0; i-- )
    if (strlen(*(topten+i)) == 6)
        printf("%6s",  *( topten + i ) + 1 );
```

b)
```
for ( i = 0; i < 10; i++ )
    if (*(*(topten + i)+2) == 'o')
        printf(" %s", *( topten + i ));
```

2. **(10 pts.)** Trace the following program segment and show its output.

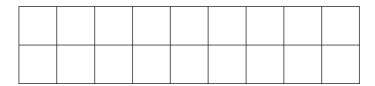```c
#include <stdio.h>
#include <string.h>
#define MAX 15

int main(void)
{
    char s1[MAX] = "t5s6", s2[MAX] = "x1y2z3w4", s3[MAX], temp[MAX];
    int len = strlen (s1);
    strncpy(s3, s1, 2); s3[2]='\0';
    strcat(s3, s2+2);
    printf("%s\n", s3);
    strcpy (temp, s3+len);
    strncat (temp, s3,4);
    strcpy(s3, temp);
    printf("%s\n", s3);
    return(0);

}
```
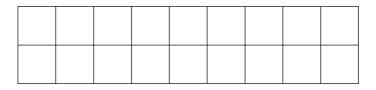
**Output:**

**3. (10 pts.)** Given a list :  **15 25 23 11 72 32 91 45 83**

Show the first 2 pass of bubble and selection sort in <u>descending order</u>.


Bubble :

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |


Selection:

|  |  |  |  |  |  |  |  |  |
|---|---|---|---|---|---|---|---|---|
|  |  |  |  |  |  |  |  |  |


**4. (10 pts.)** Trace the following function. Show the output.

```c
#include<stdio.h>

void
numeric(int n, int limit)
{
   printf("\n??%d", n);
   if (n < limit)
   {
        numeric (5*n, limit);
        printf("\n&&%d", n);
   }
   else
        printf("\n++%d", n);
}

int main(void)
{
   numeric(10, 1000);
   return(0);
}
```

Output: