23/9/2025, 9:30AM to 11:30AM. CS101C-Introduction to Programming (Using C), mid-semester Examination, Autumn 2025. Max Points: 40. This exam is *closed-book, No notes, textbooks, electronic devices (including smartwatches, calculators) are allowed. Your answers must be syntactically correct where required.*

Section - I (Multiple Choice Questions)[1 Point Each]

Enter your final answers here only. Evaluation will be based solely on these entries, not on any ticks in the questions. Please ensure accuracy when submitting all 20 MCQ answers.																			
Q.No	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
Ans																				

1. Return type of the built-in function that computes the length of a string in C is:
   a. `int` b. `char` c. `size_t` d. `long`

2. Select the correct answer after matching:
   - 1. Command to create a file. 2. Command to translate a human-readable file to binary. 3. Command to print a file on the terminal. 4. Command to delete a file
   - A. `gcc` B. `gedit` c. `cat` d. `rm` e. `del`

   a. 1-B, 2-A, 3-C, 4-D b. 1-B, 2-A, 3-C, 4-E c. 1-A, 2-B, 3-C, 4-D d. 1-A, 2-B, 3-C, 4-E e. 1-B, 2-A, 3-C, 4-D

3. The following code snippet, when executed, would print:

```
int x=10;
printf("%d ",x++);
printf("%d ",++x);
printf("%d ",x++);
```

   a. 10 12 12 b. 11 12 13 c. 10 12 13 d. 11 11 12

4. The following code snippet: char* x=”CSE”; `printf(“%c”,1[x]);` when executed, would:
   a. print %c b. print S c. print C d. throw syntax error i.e. it would not compile

5. The following code snippet: int x=5; `printf(“%zu”,sizeof(x));` when executed, would print:
   a. 4 b. 5 c. 6 d. 8

6. Assuming that integer variable `y` has been defined and initialized, the correct way of initializing a pointer in C is:
   a. `int *x=&y;` b. `int &x=y;` c. `int* x=&y;` d. `*int x=y;` e. a and c f. a, c, and d

7. Assuming that integer variables `a=10` and `b=0,` the result of the expression `a&&b` is:
   a. 0 b. 10 c. 1 d. 100

8. The condition in `if(a=100)` has a value:
   a. 100 b. 0 c. 1 d. Depends on the value of a

9. Assuming that integer variables `a=64` and `b=2,` the result of the expression `a>>b` is:
   a. 64 b. 32 c. 16 d. 128 e. 256

10. The binary equivalent of 0xC5E is:
    a. 1100 0101 1110 b. 1110 0101 1100 c. 1110 1100 0101 d. 1100 1110 0101

11. Assuming that integer variables `a=10, b=3` the result of the expression `(a=b+2, a*2)` is:
    a. 10 b. 5 c. 20 d. Syntax error

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12. Assuming that integer variables `a=10,b=20,c=5,` and `d=0` the result of the expression `(d+=a?b:c)` is:
    a. 10 b. 5 c. 20 d. Syntax error

13. The following code snippet, when executed, would print:

```
int a=15;
if(a<15)
        if(a<5)
                printf("a is less than 5\n");
        else if(a<8)
                printf("a is >=5 but < 8\n");
        else if(a<12)
                printf("a is >=8 but < 12\n");
else
        printf("a is >=15 ");

printf("BYE\n");
```

    a. `a is >=15 BYE` b. `a is >=15` c. BYE d. Segmentation fault

14. The following code snippet, when executed, would print:

```
int i = 10, j = 20;
while (i<25,j<25)
{
  i++;
  j++;
}
printf("%d %d", i, j);
```

    a. 25 25 b. 15 25 c. 25 35 d. 16 26

15. In the following code snippet, which line would be a syntax error?

```
1. int x1[]={'C','S','E',0};
2. int *x2=x1;
3. int x3[3]={0x43, 0x53, 0x45};
4. int x4[4]={0x43, 0x53, 0x45, 0};
```

    a. 1 b. 2 c. 3 d.4 e. None of these.

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16. Suppose `int input[8]={6,5,3,1,8,7,2,4};` in the following code snippet when `i=3, j=-1` the content of `input` at index 2:

```
for(i=1;i<N;i++){
    key = input[i];
    j=i-1;
    while(j>=0 && input[j] > key){
           j--;
           input[j+1]=input[j];
    }
    input[j+1]=key;
}
```

a. 6 b. 5 c. 3 d.1

17. Suppose `int input[8]={6,5,3,1,8,7,2,4};` when `i=1, j=2` the content of `input` at index 4:

```
for(i=0;i<N-1;i++){
    for(j=0;j<N-i-1;j++){
           if(input[j]>input[j+1])
                  swap(&a[j],&a[j+1]);
    }
}
```

a. 6 b. 7 c. 2 d.3

18. Suppose `int input[8]={6,5,3,1,8,7,2,4};` when `i=1, j=6` the content of `input` at index 6:

```
for(i=0;i<N;i++){
    int cursor=i;
    for(j=i+1;j<N;j++){
           if(input[cursor]>input[j])
                  swap(&a[cursor],&a[j]);
    }
}
```

a. 6 b. 7 c. 5 d.2

19. The following code snippet, when executed, would print:

```
char str[] = "%d %c", arr[] = "CS101CExam";
printf(str, 0[arr], 2[arr + 3]);
return 0;
```

a. 43 C b. 67 C c. 67 1 d.Syntax error

20. The following code snippet, when executed, would print:

```
char str[] = "I love mess food";
printf("%d", strlen(str));
```

a. 16 b. 17 c. 15 d. 13

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Section - II (Complete a C Program)

Please complete the given C program by filling in the blanks/ writing answers in the space provided in front of the question.

Q1. Complete the following program, which initializes an array X[] of size 100 with integers 1–100. Elements 0 to 24 of X[] contain the values 76–100 sequentially. Elements 25 to 49 of X[] contain the values 1–25 sequentially. Elements 50 to 74 of X[] contain 51–75 sequentially. Elements 75 to 99 of X[] contain 26–50 sequentially. The program then reorders the elements of the array X[] such that the resulting array is sorted, that is, X[i] = i + 1 for all i. Note that there will be two expressions in total to answer here: the first two blanks will take the same expression, and The last two blanks will take the same expression. **[4 Points]**

```
#include <stdio.h>
int main (){
            int j, t, X[100];
           // Initialization
           for (j=0; j<100; j++){
                 if ( j < 25 ) X[j] = j + 76;
                 else if ( j < 50 ) X[j] = j - 24;
                 else if ( j < 75 ) X[j] = j + 1;
                 else X[j] = j - 49;
           }
            // Reordering
           for (j=25; j<50; j++){
                 t = X[j];
                 X[j] = First Blank(1 Point)
                 Second Blank(1 Point) = t;
           }
           for (j=0; j<25; j++){
                  t = X[j];
                  X[j] = Third Blank (1 Point)
                 Fourth Blank (1 Point) = t;
           }
}
```

Q2. Fill in the blanks to complete the following program that calculates the sum as well as the sum of the squares of an array storing ten floating-point numbers. **[5 Points]**

```
#include <stdio.h>
void fun ( double A[], double *x, double *y ){
      int i;
      for (i=0; i<10; i++) {
        First Blank += A[i];
        *y += Second Blank ;
      }
}
int main(){
      int i;
      double A[10], sum = 0, sumSqr = 0;
```

```
        for (i=0; i<10; i++) {
           printf("Enter element %d: ", i+1);
                    scanf("%lf", &A[i]);
                  }
        fun (Third Blank,Fourth Blank,Fifth Blank);
        printf("The sum of the elements of A is %lf\n", sum);
        printf("The sum of the squares of the elements of A is %lf\n", sumSqr);
        return 0;
}
```

Q3. Fill in the blank so that the following program fragment prints Dharwad. **[1 Points]**

```
char s[] = "IITDharwad", *p;
First Blank;
printf ("%s", p);
```

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Section - III (Write a C Program)[10 Points]

Q. Write a C program (that compiles without any errors) to count how many times any two vowels appear one after another in a line of text. For example, in the following sentence: "**Please read this application and give me gratuity**." The count is 3 because of the occurrences: **ea, ea,ui**.

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