```
getchar();
}
```

Number of times printf() statement is executed

```
#include<stdio.h>
int main()
{
int i, j, k=0;
j=2 * 3 / 4 + 2.0 / 5 + 8 /5;
k - = - j;
for(i=0;i<5;i++)
{
switch (i+k)
{
case 1:
case 2: printf("\n%d", i+k);
case 3: printf("\n%d", i+k);
default:printf("\n%d",i+k);
}
}
return 0;
}
```

j.

```
#include<stdio.h>
int * A, stkTop;
int stkFunc (int opcode, int val)
{
static int size=0, stkTop=0;
switch (opcode)
{
case -1:
size = val;
break;
case 0;
if (stkTop < size ) A[stkTop++]=val;
break;
default:
if (stkTop) return A[--stkTop];
}
return -1;
}
int main()
{
int B[20];
A=B;
stkTop = -1;
stkFunc (-1, 10);
stkFunc (0, 5);
stkFunc (0, 10);
printf ("%d\n", stkFunc(1, 0)+
stkFunc(1, 0));
}
```

Part C

Answer all the Questions.

Each question carries *five* marks. **(3 Questions x 5 marks = 15 Marks)**

Q17.a. Write the difference between structure and union with any example. Explain the use of putchar() and getchar() functions. (2 marks)

b. Write a program to check whether a number is Palindrome or not. Draw the flow chart for the same? (Note: A number is said to be Palindrome if the reversal to digits results in the same number. e.g. 121, 34543, 131, 343, 48984) (3 marks)

Q18.a. Describe four basic data types. How can we extend the range of values. (2 marks)

b. Write a program to check whether a number is an Armstrong number or not. Draw the flow chart for the same? (Note: Armstrong number is a number that is equal to the sum of cubes of its digits. For example: 0, 1, 153, 370, 371 and 407 are the Armstrong numbers, i.e., 153=(1*1*1)+(5*5*5)+(3*3*3)=1+125+27=153). (3 marks)

Q19.a Write a program to find the maximum and minimum of two numbers without using any lopping or conditional statement. (Hint: Use operators and abs() function) (1 mark)

b. Explain the use of break and continue keyword in C. (4 marks)

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2023BE-5012

MAJOR EXAMINATION-2023

Course Code: CS/IT-101 **Date**: 03-12-2023 (Sun)
Course Name: Principles of Computer Programming **Max Marks**: 50
Program & Sem: B.Tech (IMT/IMG/CSE/MSC/EEE), 1st Semester **Time**: 3 Hrs

Instructions:
(i) Read the all questions carefully and answer accordingly.
(ii) This Question paper contains questions.

Part A

Answer all the Questions.

Each question carries *one* marks. **(15 Questions x 1 Mark = 15 Marks)**

Q1. Consider the following C declaration:

```
struct {
  short s[5];
  union {
    float y;
    long z;
  }u;
} t;
```

Assume that objects of the type short, float and long occupy 2 bytes, 4 bytes and 8 bytes, respectively. The memory requirement for variable t, ignoring alignment considerations, is:

(a) 22 bytes (b) 14 bytes (c) 18 bytes (d) 10 bytes

Q2. A typical repetition control structure comprises which of the following part

(a) Initialization of condition variable (b) Execution Block (c) Test Condition and Counter update instruction (d) All of these

Q3. In C, static storage class cannot be used with:

(a) Function Parameter (b) Global Variable (c) Function name (d) Local Variables

Q4. Which of the following operators can be applied on structure variables?

(a) Equality (==) (b) Assignment (=) (c) Both a and b (d) None of the above

Q5. An array x[5][20] has been declared. What will be the output of the following statement:

printf("%d", sizeof(x));

(a) 100 (b) 200 (c) 400 (d) 800

Q6. An array N[3]={1, 2, 3}; has been declared and initialized in a C program. What will be the output of the following statement:

printf("%d",N[3]);

(a) 3 (b) 2 (c) 4 (d) Garbage Value

Q7. The process of creating a fixed-sized array by allocating memory space at compile time is called

(a) Static Memory Allocation (b) Dynamic Memory Allocation (c)Run Time Allocation (d) None of the Above

Q8. Which of the following values can be returned by the strcmp() function?

(a) Positive value (b) Negative value (c) Zero (d) All of the Above

Q9. A character array str[] stores the string "NEW". What will be the return value of statement strlen(str) function?

(a) 3 (b) 4 (c) 0 (d) None of these

Q10. It is required to store the name of five students. Which of the following array declaration statements can be used for this.

(a) char student [4][30]; (b) char student [30][4]; (c) char student [5][30]; (d) char student [30][5];

Q11. Which constant values can be assigned to a pointer variable?

(a) 0 (b) NULL (c) Both a and b (d) None

Q12.Which of the following is a valid indirection notation for a pointer.

(a) *ptr (b) **ptr (c) ***ptr (d) All of the above

Q13. Which of the following operations is allowed to be performed on a pointer variable

(a) ptr+1 (b) ptr-1 (c) ptr++ and ptr— (d) All of the above

Q14. Which of the following function is used to write an integer to a file

(a) fprintf() (b) putw() (c) putc() (d) puts()

Q15. In C, parameters are always.

(a) Passed by value (b) Passed by reference (c) Non-pointer variables are passed by value and pointers are passed by reference (d) Passed by value result

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Part B

Answer all the Questions.

Each question carries 2 marks. (10 Questions x 2 marks = 20 Marks)

Q16. What will be the output of the following program? Explain if there is no output, explain the reason for the same.

a.
```
#include<stdio.h>
void func(int n, int sum)
{
int k = 0, j = 0;
if (n == 0) return;
k=n%10;
j=n/10;
sum=sum+k;
func (j, sum);
printf ("%d,", k);
}
int main ()
{
int a = 2048, sum = 0;
func (a, sum);
printf ("%d ", sum);
}
```

b.
```
#include<stdio.h>
#include<string.h>
int main()
int main()
{
char p[20];
char s[]= "string";
int length=strlen(s);
int i;
for(i=0;i<length;i++)
p[i]=s[length-i];
printf("%s",p);
return 0;
}
```

c.
```
#include <stdio.h>
int main()
{int m,n,p;
for(m=0;m<3;m++)
for(n=0;n<3;n++)
for(p=0;p<3;p++)
if(m+n+p==2)
goto print;
print:
printf("%d,%d,%d",m,n,p);
return 0;
}
```

d.
```
#include<stdio.h>
int main()
{char str1[]= "Week-7-Assignment";
char str2[]={'W', 'e', 'e', 'k', '-', '7', 'A',
's', 's', 'i','g', 'n', 'm', 'e', 'n', 't'};
int n1=sizeof(str1)/sizeof(str1[0]);
int n2=sizeof(str2)/sizeof(str2[0]);
printf("n1=%d,n2=%d",n1,n2);
return 0;
}
```

e.
```
#include <stdio.h>
int main()
unsigned int i =65000;
while(i++!=0);
printf("%d",i);
return 0;
}
```

f.
```
#include <stdio.h>
int f(char *p);
int main()
{char str[ ] = "ANSI";
printf("%d", f(str));
}
int f(char *p)
{char *q = p;
while (*++p)
;
return (p-q);
}
```

g.
```
int f(int x, int *py, int **ppz)
{
int y, z;
**ppz += 1;
z = **ppz;
*py += 2;
y = *py;
x += 3;
return x + y + z;
}
void main()
{
int c, *b, **a;
c = 4;
b = &c;
a = &b;
printf( "%d", f(c,b,a));
```

h.
```
#include<stdio.h>
int main()
{
int a=1;
int b=1;
int c=a||--b;
int d=a--&&--b;
printf("a=%d, b=%d, c=%d, d=%d", a
b, c, d);
return 0;
}
```