



Roll No: _____

Indian Institute of Technology Patna

Date: 29 April 2019, 9-12 pm

CS102: Programming and Data Structure

End Sem: 200 Marks. 3 Hours

Instruction:

Q1-35, 4 marks each. 1 mark will be deducted for each wrong answer.

Q36-50, 4 marks each. No negative marking.

All options should be written on the table provided in the last page. Evaluation will be based only on that table. Assume `#include <stdio.h>` and other includes for all questions. No doubts would be entertained. Write suitable assumptions, if necessary.

Q(1) Predict Output

```
void main()
{
    void v = 0;
    printf("%d", v);
}
```

- (A) Error: Declaration syntax error 'v' (or) Size of v is unknown or zero
- (B) Program terminates abnormally
- (C) No error
- (D) None of above

Q(2) Point out the error in the following program

```
struct emp
{
    char name[20];
    int age;
};
void main()
{
    emp int xx;
    int a;
    printf("%d\n", &a);
}
```

- (A) Error: in printf
- (B) Error: in emp int xx;
- (C) No error
- (D) None of these

Q(3) Predict Output

```
#include <stdio.h>
int fun(int arr[]) {
    arr = arr+1;
    printf("%d ", arr[0]);
}
void main(void) {
    int arr[2] = {10, 20};
    fun(arr);
    printf("%d", arr[0]);
}
```

- (A) Compiler Error
- (B) 20 10
- (C) 20 20
- (D) 10 10

Q(4) What will be the output of the following C code? (Assuming that we have entered the value 1 in the standard input)

```
void main()
{
    double ch;
    printf("enter a value between 1 to 2:");
    scanf("%lf", &ch);
    switch (ch)
    {
        case 1:
            printf("1");
            break;
        case 2:
            printf("2");
            break;
    }
}
```

- (a) Compile error (b) 1 (c) 2 (d) 3

Q(5) What will be the output of the following C code?

```
int main(void)
{
    char c[ ] = "ICRBCSIT17";
    char *p=c;
    printf("%s", c+2[p] - 6[p] - 1);
    return 0;
}
```

- (a) SI (b) IT (c) TI (d) 17

Q(6) What will be the output of the following C code on a 32-bit machine?

```
void main()
{
    int x = 10000;
    double y = 56;
```

```
int *p = &x;
double *q = &y;
printf("p and q are %d and %d",
      sizeof(p), sizeof(q));
}
```

- (A) p and q are 4 and 4
- (B) p and q are 4 and 8
- (C) compiler error
- (D) p and q are 8 and 8

Q(7) What will be the output of the following C code?

```
void main()
{
    float x = 'a';
    printf("%f", x);
}
```

- (A) a
- (B) run time error
- (C) a.0000000
- (D) 97.000000

Q(8) What will be the output of the following C code?

```
void main()
{
    int i = 3;
    int l = i / -2;
    int k = i % -2;
    printf("%d %d\n", l, k);
}
```

- (A) Compile time error
- (B) -1 1
- (C) 1 -1
- (D) Implementation defined

Q(9) What will be the output of the following C code?

```
void main()
{
    int a = 10, b = 5, c = 5;
    int d;
    d = a == (b + c);
    printf("%d", d);
}
```

- (A) Syntax error
- (B) 1
- (C) 10
- (D) 5

Q(10) What will be the output of the following C code?

```
void main()
{
    int x = 1, y = 0, z = 5;
    int a = x && y || z++;
    printf("%d", z);
}
```

- (a) 6 (b) 5 (c) 0 (d) 8

Q(11) What will be the output of the following C code?

```
void main()
{
    int a = 10, b = 5, c = 3;
    b != !a;
    c = !a;
    printf("%d\\t%d", b, c);
}
```

- (A) 5 1
- (B) 0 3
- (C) 5 3
- (D) 1 1

Q(12) What will be the output of the following C code?

```
void main()
{
    unsigned int i = 23;
    signed char c = -23;
    if (i > c)
        printf("Yes\n");
    else if (i < c)
        printf("No\n");
}
```

- (A) Yes
- (B) No
- (C) Compile Error
- (D) Yes No

Q(13) In which order do the following gets evaluated

1. Relational
2. Arithmetic
3. Logical
4. Assignment

- (A) 2134
- (B) 1234
- (C) 4321
- (D) 3214

Q(14) What will be the output of the following C code?


```
void main()
{
    int x = 4;
    int *p = &x;
    int *k = p++;
    int r = p - k;
    printf("%d", r);
}
```

- (a) 4 (b) 8 (c) 1 (d) Run time error

Q(15) What will be the output of the following C code?

```
void main()
{
    int a = -5;
    int k = (a++, ++a);
    printf("%d\n", k);
}
```

- (a) -4 (b) -5 (c) 4 (d) -3

Q(16) What will be the output of the program If characters 'a', 'b' and 'c' enter are supplied as input? Input is given as "a b c  "[Inputs are separated by space and the Enter key is pressed ONLY once after all inputs are provided. In this case enter is pressed after typing "a b c"]

```
void main()
{
    void fun();
    fun();
    printf("\n");
}

void fun()
{
    char c;
    if((c = getchar()) != '\n')
        fun();
    printf("%c", c);
}
```

- (A) abc abc
(B) bca
(C) Infinite loop
(D) cba

Q(17) What will be the output of the program ?

```
void main()
{
    char *names[] =
    { "Suresh", "Siva", "Sona", "Baiju", "Ritu"};
    int i;
    char *t;
    t = names[3];
```

```
names[3] = names[4];
names[4] = t;
for(i=0; i<=4; i++)
    printf("%s,", names[i]);
}
```

- (A) Suresh, Siva, Sona, Baiju, Ritu
(B) Suresh, Siva, Sona, Ritu, Baiju
(C) Suresh, Siva, Baiju, Sona, Ritu
(D) Suresh, Siva, Ritu, Sona, Baiju

Q(18) What will be the output of the program ?

```
void main()
{
    static char mess[6][30] =
    {"Don't walk in front of me...",
     "I may not follow;",
     "DON'T WALK BEHIND ME...",
     "Just walk beside me...",
     "And be my friend." };

    printf("%c, %c\n", *(mess[2]+9),
           *(*mess+2)+9));
}
```

- (A) t, t
(B) k, k
(C) n, k
(D) m, f

Q(19) What will be the output of the program ?

```
void main()
{
    char str1[] = "Hello";
    char str2[10];
    char *t, *s;
    s = str1;
    t = str2;
    while(*t==*s)
        *t++ = *s++;
    printf("%s\n", str2);
}
```

- (A) Hello
(B) HelloHello
(C) No output
(D) ello

Q(20) What will be the output of the following C code?

```
int x;
void main()
{
    if (x)
        printf("hi");
```

```

    else
        printf("how are you");
}

```

- (A) hi
- (B) how are you
- (C) compile time error
- (D) none of the mentioned

Q(21) What will be the output of the following C code?
(Assuming that we have entered the value 1 in the standard input)

```

void main()
{
    int ch;
    printf("enter a value between 1 to 2:");
    scanf("%d", &ch);
    switch (ch, ch + 1)
    {
        case 1:
            printf("1\n");
            break;
        case 2:
            printf("2");
            break;
    }
}

```

- (a) 1
- (b) 2
- (c) 3
- (d) Run time error

Q(22) What will be the output of the program?

```

void main()
{
    int a=0, b=1, c=3;
    *((a) ? &b : &a) = a ? b : c;
    printf("%d, %d, %d\n", a, b, c);
}

```

- (a) 0, 1, 3
- (b) 1, 2, 3
- (c) 3, 1, 3
- (d) 1, 3, 1

Q(23) What will be the output of the program?

```

void main()
{
    int x = 10, y = 20;
    if(!(!x) && x)
        printf("x = %d\n", x);
    else
        printf("y = %d\n", y);
}

```

- (a) y = 20
- (b) x = 0
- (c) x = 10
- (d) x = 1

Q(24) What will be the output of the following C code?

```

void main()
{
    int i = 0;
    for (foo(); i == 1; i = 2)
        printf("In for loop\n");
    printf("After loop\n");
}
int foo()
{
    return 1;
}

```

- (a) After loop
- (b) In for loop after loop
- (c) Compile time error
- (d) Infinite loop

Q(25) What will be the output of the following C code?

```

void main()
{
    int i = 0;
    do
    {
        printf("Hello");
    } while (i != 0);
}

```

- (a) Nothing
- (b) H is printed infinite times
- (c) Hello
- (d) Run time error

Q(26) What will be the output of the following C code?

```

void main()
{
    int i = 0, j = 0;
    for (i = 0; i < 5; i++)
    {
        for (j = 0; j < 4; j++)
        {
            if (i > 1)
                break;
        }
        printf("Hi \n");
    }
}

```

- (a) Hi is printed 5 times
- (b) Hi is printed 9 times
- (c) Hi is printed 7 times
- (d) Hi is printed 4 times

Q(27) What will be the output of the following C code? Q(30) What will be the output of the following C code?

```
void main()
{
    int i = 0;
    int j = 0;
    for (i = 0; i < 5; i++)
    {
        for (j = 0; j < 4; j++)
        {
            if (i > 1)
                continue;
            printf("Hi \n");
        }
    }
}
```

- (a) Hi is printed 9 times
- (b) Hi is printed 8 times
- (c) Hi is printed 7 times
- (d) Hi is printed 6 times

Q(28) What will be the output of the following C code?

```
void main()
{
    printf("before continue ");
    continue;
    printf("after continue\n");
}
```

- (a) Before continue after continue
- (b) Before continue
- (c) After continue
- (d) Compile time error

Q(29) What will be the output of the following C code?

```
void foo( int[] );
void main()
{
    int ary[4] = {1, 2, 3, 4};
    foo(ary);
    printf("%d ", ary[0]);
}
void foo(int p[4])
{
    int i = 10;
    p = &i;
    printf("%d ", p[0]);
}
```

- (a) 10 10
- (b) Compile time error
- (c) 10 1
- (d) Undefined behaviour

```
void main()
{
    int ary[4] = {1, 2, 3, 4};
    int *p = ary + 3;
    printf("%d %d\n", p[-2], ary[*p]);
}
```

- (a) 2 3
- (b) Compile time error
- (c) 2 4
- (d) 2 0

Q(31) What will be the output of the program if the array begins 1200 in memory?

```
void main()
{
    int arr[]={2, 3, 4, 1, 6};
    printf("%u, %u, %u\n", arr, &arr[0], &arr);
}
```

- (a) 1200, 1202, 1204
- (b) 1200, 1200, 1200
- (c) 1200, 1204, 1208
- (d) 1200, 1202, 1200

Q(32) What will be the output of the following C code?

```
void main()
{
    char *s= "hello";
    char *p = s;
    printf("%c\t%c", 1[p], s[1]);
}
```

- (a) h h
- (b) Run time error
- (c) l l
- (d) e e

Q(33) What is the output of this C code?

```
struct student
{
    char *name;
};
void main()
{
    struct student s, m;
    s.name = "st";
    m = s;
    printf("%s%s", s.name, m.name);
}
```

- (a) Compile time error
- (b) Nothing
- (c) Junk values
- (d) st st

Q(34) Predict Output

```
void main(){
    int i=10;
    static int x=i;
    if(x==i)
        printf("Equal");
    else if(x>i)
        printf("Greater than");
    else
        printf("Less than");
}
```

- (a) Equal
- (b) Greater than
- (c) Less than
- (d) Compiler error

Q(35) What will be the output of the following C code?

```
struct student
{
    char *name;
};
struct student fun(void)
{
    struct student s;
    s.name = "alan";
    return s;
}
void main()
{
    struct student m = fun();
    s.name = "turing";
    printf("%s", m.name);
}
```

- (a) alan
- (b) Turing
- (c) Compile time error
- (d) Nothing

Q(36) Predict Output

```
void main(){
    printf("%s","c" "question" "bank");
}
```

- (a) c question bank
- (b) c
- (c) bank
- (d) cquestionbank

Q(37) In which stage the following code

```
#include "string.h"
void main(){
    printf("%d%d",sizeof("string"),
        strlen("string"));
}
```

- (a) 6 6
- (b) 7 7
- (c) 6 7
- (d) 7 6

Q(38) Which variable has the longest scope in the following C code?

```
int b;
int main()
{
    int c;
    return 0;
}
int a;
```

- (a) a
- (b) b
- (c) c
- (d) Both a and b

Q(39) What is the scope of a function?

- (a) Whole source file in which it is defined
- (b) From the point of declaration to the end of the file in which it is defined
- (c) Any source file in a program
- (d) From the point of declaration to the end of the file being compiled

Q(40) What will be the output of the following C code?

```
void main()
{
    {
        int x = 8;
    }
    printf("%d", x);
}
```

- (a) 8
- (b) 0
- (c) Garbage Value
- (d) Compile time error

Q(41) Which of the following is a correct format for declaration of function?

- (a) return-type function-name(argument type);
- (b) return-type function-name(argument type){}
- (c) return-type (argument type)function-name;
- (d) all of the above

Q(42) Process of removing, inserting an element in stack is called:

- a) Pop, Push
- b) Push, Pop
- c) Overflow, Underflow
- d) Underflow, Overflow

Q(43) What will be the output of the following C code? Write the output in space provided for Q43 on the last page.

```
void func();
void main()
{
    static int b = 20;
    func();
}
void func()
{
    static int b;
    printf("%d", b);
}
```

Q(44) What will be the output of the program? Write the output in space provided for Q44 on the last page.

```
void main()
{
    int i=3, *j, k;
    j = &i;
    printf("%d\n", i**j*i**j);
}
```

Q(45) What will be the output of the program? Write the output in space provided for Q45 on the last page.

```
void main()
{
    char *str;
    str = "%d\n";
    str++;
    str++;
    printf(str-2, 300);
}
```

Q(46) The data structure required to check whether an expression contains balanced parenthesis is?. Write the output in space provided for Q46 on the last page.

Q(47) What will be the output of the following C code? Write the output in space provided for Q47 on the last page.

```
void main()
{
    char a[2][6] = {"hello", "hi"};
    printf("%s", *a + 1);
}
```

Q(48) Convert decimal(2288) into Binary Form. Show steps. Write the final answer in space provided for Q48 on the last page. Space for steps is available after Q50

Q(49) Convert bin(1100000100000010) into Hex Form. Show steps. Write the final answer in space provided for Q49 on the last page. Space for steps is available after Q50

Q(50) What is IITPanta's ranking under NIRF in Top Engineering College in India for 2019?

- (a) 21 (b) 22 (c) 23 (d) 24

Question # Option #/Output [-ve Marking 1-35]

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Question # Option #/Output [No -ve Marking 36-50]

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Roll No: _____

Name (in Capital): _____

Student's Signature: _____

Invigilator's Signature: _____

For Office Use:

Correct Ans (1-35)	Wrong Ans (1-35)	Correct Ans (36-50)	Total(200)
*4	* - 1	*4	