1. Operating system is an example of

a) System Software
b) Application software
c) Programming software
d) None of the above

Solution: (a) Operating system is an example of system software which works as a connecting medium between application software and hardware.

2. C language is an example of

a) Machine level language
b) Low level language
c) High-level language
d) Medium-level language

Solution: (c) C is a high-level language like C++ and Java.

3. Which of the following is not a correct variable type in C?

a) int
b) float
c) real
d) double

Solution: (c) real is not a correct variable type in C

4. Which of the following is not a C variable?
   a) Count123
   b) Count_123
   c) Count@123
   d) X_123_Count

Solution: (c) Only alpha-numeric characters and few special characters like '_' are allowed in variable name is C. The special character @ is not allowed.

5. Which of the following statement is correct?
   a) System software is dependent on application software
   b) Application software is dependent on system software
   c) Both are independent of each other
   d) None of the above.

Solution: (b) System software is independent of the application software. Application software cannot run without the presence of system software.

6. What is operating system?
   a) collection of programs to manage hardware resources
   b) system service provider to the application programs
   c) link to interface the hardware and application programs
   d) all of the above

Solution: (d) all of the above

7. Syntax error occurs when
    a) The rules of grammar of the language is violated
    b) The statements in the program have no meaning
    c) The program gives wrong or undesired output
    d) Some illegal operation(e.g. divide by zero) is done

Solution: (a) The rules of grammar of the language is violated

8. The ratio of the memory allocated to int, float and char variable in C is
    a) 1:2:1
    b) 2:3:1
    c) 2:1:4
    d) 2:4:1

Solution: (d) Integer takes 2 units of memory (8 bit or 16 or higher bits for each unit depending on the architecture of the computer), float takes 4 units and character takes 1 unit of memory. Thus, the ratio is 2:4:1

9. If integer needs two bytes of storage, then the minimum value of a signed integer in C would be

    a) $-(2^{16}-1)$
    b) 0
    c) $-(2^{15}-1)$
    d) -2^{15}

Solution: (d) The first bit is used to indicate whether it is signed or unsigned integer.

10. Character literals in C syntax are?

    a) C
    b) ‘C’
    c) “C”
    d) None

Solution: (b) ‘C’ is the correct literal syntax of character.

11. The output of the program is

```
#include<stdio.h>
main()
{
        int a=10; b=15; c=20;
        c=a+b;
```

```
        printf("%d",c);
}
```

a) 25
b) 20
c) 10
d) Compilation error

Solution: (d) While initializing the variables, ";" indicates the end of the line. Thus after initializing the variable a, the line ends. b and c will be undeclared data type. So, the error will be "b and c are not declared in the scope".

12. The name of the variable used in one function can also be used in another function
    a) True
    b) False
    c) May be
    d) None of the mentioned

    Solution: (a) Since the scope of the variable declared within a function is restricted only within that function, the same name can be used to declare another variable in another function.

13. What is the output of the following program?

```
#include<stdio.h>
main()
{
        int a=10, b;
        b=a/3;
        printf("%f", b);
}
```

    a) 3.000000
    b) 1
    c) 0.000000
    d) Compilation error

Solution: (c) b is initialized with an integer variable. After performing the operation "b=a/3", 3 will be stored in b. As we are printing the value of b with %f (i.e. floating value), it will print 0 as it does not contain any floating value. So, the right answer is 0.000000

14. What is the output of the following program?

```
#include <stdio.h>
#define a 5
main()
{
        int a=2, b=3;
        a=a+b;
        b=a-b;
        a=a-b;
   printf("%d, %d", a, b);
}
```

a) 2,3
b) 3,2
c) 5,2
d) Compilation error

Solution: (d) #define is a pre-processor and a is replaced by 5 before compiling. Thus 'a' cannot be declared as a variable. Thus, the compiler will return compilation error.

15. What is the output of the following program? (Assuming that the program is run on a 32-bit system)

```
#include<stdio.h>
int main()
{
   char a='a';
   a=a+3;
   printf("%c", a);
}
```

a) a
b) 100
c) d
d) Compilation error

Solution: (c) ASCII value of 'a' will be added with 3 and the result will become 100. As we are printing the character, the character corresponding to ASCII value 100 will be printed which is 'd'.

16. What is the output of the following C code?

```
#include <stdio.h>
main()
{
   int var = 010;
   var=var+10;
   printf("%d", var);
}
```

a) 10
b) 20
c) 18
d) Compiler error

Solution: (c) 010 is octal representation of 8. Thus 8 +10=18 will be stored in var.

17. What will be the output?
[N.B.: .2f is used for printing floating point value with 2 decimal places]

```
#include <stdio.h>
int main()
{
  float a = 5.0;
  printf ("The output is  %.2f", (7/5)*a + 12);
```

```
    return 0;
}
```

a) The output is 19.00
b) The output is 12.00
c) The output is 0.00
d) The output is 17.00

Solution: (d) 17.00

Since 7 and 5 are integers, integer arithmetic happens in sub-expression (7/5) and we get 1 as its value. To fix the above program, we can use 7.0 instead of 7 or 5.0 instead of 5 so that floating point arithmetic happens.

18. Which data type is most suitable for storing a number 56432 in a 32 bit gcc compiler?

    a) int
    b) short int
    c) unsigned short int
    d) double

Solution: (c) unsigned short int

The number is unsigned as well as it lies within the range of short int (0 to 65,535) without wasting memory space. Thus (c) is the best choice

19. We use the concept of function for the following reason
    a) To use divide and conquer strategy
    b) For code reusability
    c) Enhances the logical clarity of the program
    d) All of the above.

Solution: (d)

20. A function is

    a) Block of statements to perform some specific task
    b) It is a fundamental modular unit to perform some task
    c) It has a name and can be used multiple times
    d) All of the above

    Solution: (d) All are true