PROGRAMMING FOR PROBLEM SOLVING

Unit 1

Multiple Choice questions MCQ

1. Who is father of C Language? [CLO 1] [PLO1]

A. Bjarne Stroustrup **B. Dennis Ritchie**
C. James A. Gosling D. Dr. E.F. Codd

2. C Language developed at _____? [CLO 1] [PLO 1]

A. AT & T's Bell Laboratories of USA in 1972
B. AT & T's Bell Laboratories of USA in 1970
C. Sun Microsystems in 1973
D. Cambridge University in 1972

3. For 16-bit compiler allowable range for integer constants is ______ ? [CLO 1] [PLO 2]

A. -3.4e38 to 3.4e38
B. -32767 to 32768
C. -32768 to 32767
D. -32668 to 32667

4. C programs are converted into machine language with the help of [CLO 1] [PLO 1]

A. An Editor
B. A compiler
C. An operating system
D. None of the above

5. A C variable cannot start with [CLO 1] [PLO 1]

A. An alphabet
B. A number
C. A special symbol other than underscore
D. both (b) and (c)

6. Which of the following is allowed in a C Arithmetic Instruction? [CLO 1] [PLO 1]

A. []
B. {}
C. ()
D. None of the above

7. Which of the following shows the correct hierarchy of arithmetic operations in C [CLO 1] [PLO 2]

A. / + * -
B. * -/ +
C. + - / *
D. * / + -

8. Program which is written originally by the programmer is classified as [CLO 1] [PLO 1]

A. object code
B. machine code
C. source program
D. interactive programs

9. Data types are differed on the basis of [CLO 1] [PLO 1]

A. the way of storage
B. the type of operations
C. the type of operators used
D. both a and b

10. Loop statement which is repeated for some given number of times is classified as [CLO 1]

A. FOR loop
B. GO loop
C. REPEAT loop
D. GO REPEAT loop

11. Type of statement written in sequence and is repeated until the specific condition met is classified as [CLO 1] [PLO 1]

A. format
B. loop
C. case
D. condition

12. Size of an array is declared by [CLO 1] [PLO 1]

A. programmer
B. program users
C. software
D. declared automatically

13. Programming language 'FORTRAN' stands for [CLO 1] [PLO 1]

A. formula translator
B. formula translation
C. free translator
D. free translation

14. Functions that are used in the programs and are defined by the programmers are called [CLO 1] [PLO 2]

A. program layout
B. program procedure
C. built-in functions
D. user-defined function

15. An assembler translates [CLO 1] [PLO 1]

A. machine code into assembly code

B. assembly code into machine code

C. processing time into manual time

D. routine into subroutine

16. Name given by a programmer to any particular data is classified as [CLO 1] [PLO 1]

A. identifier

B. identification

C. exponent

D. mantissa

17.When variable used in program is whole number, the variable is stored as [CLO 1] [PLO 2]

A. fixed string

B. integers

C. negative whole numbers

D. positive whole numbers

18. In programming, programmers use comments to [CLO 1] [PLO 1]

A. highlight program modules

B. explain module functions

C. explain used variables

D. all of above

19. Variable which uses the same name in whole program and in its all routines thus best classified as [CLO 1] [PLO 2]

A. middle variable

B. default variable

C. local variable

D. global variable

20. Statement which is used to make choice between two options and only option is to be performed is written as [CLO 1] [PLO 2]

A. if statement

B. if else statement

C. then else statement

D. else one statement

21. The__________ statement is used to transfer the control to the end of statement block in a loop:

a. Continue [CLO 1] [PLO 2]
b. Break
c. Switch
d. Goto

22. Which of the following is not a valid variable name declaration? [CLO 1] [PLO 2]

a) int _a3;
b) int a_3;
c) int 3_a;
d) int _3a

23. All keywords in C are in [CLO 1] [PLO 2]

a) LowerCase letters
b) UpperCase letters
c) CamelCase letters
d) None of the mentioned

24. Which of the following is true for variable names in C? [CLO 1] [PLO 2]

a) They can contain alphanumeric characters as well as special characters
b) It is not an error to declare a variable to be one of the keywords(like goto, static)
c) Variable names cannot start with a digit
d) Variable can be of any length

25. The format identifier '%i' is also used for _____ data type? [CLO 1] [PLO 2]

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

26. Which of the following is a User-defined data type? [CLO 1] [PLO 3]

a) typedef int Boolean;
b) typedef enum {Mon, Tue, Wed, Thu, Fri} Workdays;
c) struct {char name[10], int age};
d) all of the mentioned

27. What is the output of this C code? [CLO 1] [PLO 3]

```
#include  <stdio.h>
int main()
{
   signed char chr;
   chr = 128;
   printf("%d\n", chr);
   return 0;
}
```

a) 128

b) -128

c) Depends on the compiler

d) None of the mentioned

28. What is the output of this C code? [CLO 1] PLO 3]

```
#include <stdio.h>
int main()
{
    j = 10;
    printf("%d\n", j++);
    return 0;
}
```

a) 10 b) 11

c) Compile time error d) 0

Explanation : j is not belongs to any data type

29. The following code ‘for(; ;)’ represents an infinite loop.

It can be terminated by. [CLO 1] [PLO 3]

a) break b) exit(0)

c) abort() d) all of the mentioned

30. The keyword ‘break’ cannot be simply used within: [CLO 1] [PLO 3]

a) do-while **b) if-else**

c) for d) while

31. Which keyword is used to come out of a loop only for that iteration? [CLO 1] [PLO 3]

a) break **b) continue**

c) return d) none of the mentioned

32. The first step in problem solving is --------------- [CLO 1] [PLO 2]

a) Understand the problem c)**Identify the problem**

b) Developing algorithm/Flowchart d)Listing the possible outcome

33. The solutions which has series of actions to solve a problem are called ------ [CLO 1] [PLO 2]

a) Heuristic solutions

b) Algorithmic solutions

34. The solution can be reached by completing the actions in steps. These steps are called [CLO 1] [PLO 2]

a) Sequence c)**Algorithm**

b) Flowchart d)Steps

35. Solutions that cannot be reached through a direct set of steps are called --------- [CLO 1][PLO 2]

a)Algorithmic solutions b) **Heuristic solutions**

36. ----------- means the outcome or the completed computer-assisted answer. [CLO 1][PLO 1]

a) Solution **b) Result** c) Program

37. The field of computer that deals with the problem of heuristic solution is called-----[CLO 1] [PLO1]

a) **Artificial Intelligence**

b) Expert System c) Computer Management

38. ---------------- means the set of instructions that make up the solution after they have been coded into a programming language. [CLO 1] [PLO1]

a) solution b) result c) **program** d) error

39. ---------------- are organized facts. [CLO 1] [PLO1]

a) **Data** b) Information

40. A language applied for wide range of application is called as ______language[CLO 1][PLO 2]

a. Special purpose c)**General purpose**
b. Individual purpose d)Scientific purpose

41. Compiler converts the source code into ______ [CLO 1][PLO 4]

a. C code b. Byte code c. **Object code** d. Executable code

42. ___________ converts source code to machine language one line at a time. [CLO 1][PLO 4]

a. Compiler b. **Interpreter** **c.** Assembler d.CPU

43. The program that converts high level language to a machine language is called __________ [CLO 1] [PLO 1]

a. Interpreter b. Linker c. **Compiler** **d.** Loader

44. '#' symbol is known to be ______ [PLO 2] [CLO 1]

a. Linker b.Compiler c. Assembler d.**Preprocessor directive**

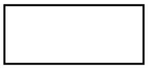
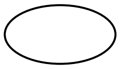
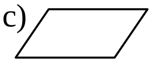
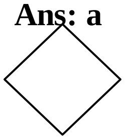
45. A _______ is a notational system for describing computations in both machine and human readable form [PLO 1] [CLO 1]

a. **Programming language** **c.**Machine language
b. High-level language d.Assembly language

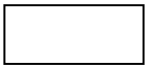
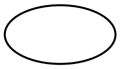
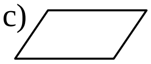
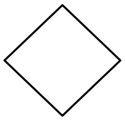
46. ----------------- program converts assembly language into machine language [PLO 2] [CLO 1]

a. compiler b. interpreter c**. assembler** d. preprocessor directive

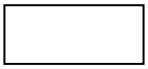
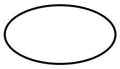
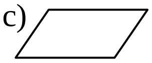
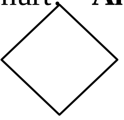
47. which symbol is been used for processing in flowchart? **Ans: a** [CLO 1] [PLO 3]

a)  b)  c)  d) 

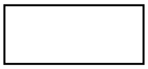
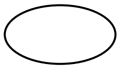
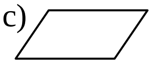
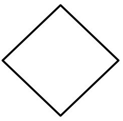
48. which symbol is been used for input/output in flowchart? **Ans: c** **[PLO 3]** [CLO 1]

a)  b)  c)  d) 

49. which symbol is been used for decision making in flowchart? **Ans: d** **[PLO 3]** [CLO 1]

a)  b)  c)  d) 

50. which is used as start/stop symbol in flowchart? **Ans:b** **[PLO 3]** [CLO 1]

a)  b)  c)  d) 

51. ------------ is a distinguishing characteristic of human excellence in every area of behavior [CLO 1] [PLO 1]

a**) creativity** b) thinking c) visualization d) problem solving

52. .What is the value of x in this C code? [PLO 2] [CLO 1]

```
#include <stdio.h>
   void main()
   {
      int x = 5 * 9 / 3 + 9;
   }
```

(a). 3.75 b) Depends on compiler c) 24 d) 3

53.A character variable can store how many characters at a time? [PLO 2][CLO 1]

(a) 1 character
(b)8 characters
(c)255 character

54.Which of the following is the correct way of writing comments? [PLO 2] [CLO 1]

(a)*/comments/*
(b)/*comment*/
(c)**comment** (
d){comment}

55. C programming language is [PLO 1] [CLO 1]

(a)object oriented programming language (b)Procedure oriented programming language
(c)function oriented programming language (d)None of the above

56.The memory space taken for a char type data is [PLO 2] [CLO 1]

(a)2 bytes
(b)4 bytes
(c)8 bytes
(d)1bytes

57 .The memory space taken for a int type data is [PLO 2] [CLO 1]

(a) 2 bytes
(b) 4 bytes

(c) 8 bytes
(d)10bytes

58.The memory space taken for a float type data is [PLO 2] [CLO 1]
(a) 2 bytes
(b) 4 bytes
(c) 8 bytes
(d)10bytes

59. What is the only function all programs must contain ? [PLO 2] [CLO 1]
(a)start()
(b)system()
(c)main()
(d)program

60.For 16-bit compiler allowable range for integer constants is ________? [PLO 2] [CLO 1]
(a) -3.4e38 to 3.4e38
(b) -32767 to 32768
(c) -32668 to 32667
(d) -32768 to 32767

61.Every statement in C program is to be terminated by a__________ [PLO 2] [CLO 1]
(a)dot(.)
(b)semi-colon(;)
(c)colon(:)
(d)Question mark(?)

62 The escape sequence „\b‟ is a [PLO 2] [CLO 1]
(a)back space
(b)next line
(c)tab
(d)none of the above

63.The memory space taken for a long int type data is [PLO 2] [CLO 1]
(a) 2 bytes
(b) 4 bytes
(c) 8 bytes
(d)10bytes

64. which of the following will not valid expressions in C? [PLO2] [CLO 1]
(a) a=2+(b=5);
(b) a=11%3
(c) a=b=c=5
(d) b+5=2

65. The -------------------- operator is true only when both the operands are true. [PLO 2][CLO 1]

a) &&
b) b) ||
c) c)!
d) d) ?:

66. The --------------------- statement when executed in a switch statement causes immediate exit from the structure. [CLO 1] [PLO 2]

a)goto
b) default
c) break
d) switch

66. The ternary conditional expression using the operator?: could be easily coded using ---------------- statement [CLO 1][PLO 2]

a)Nested if b) if-else
c) if d) for

4 Marks :

Unit-1 CLO-1

1. Comment “C is mid level language”? [**CLO-1][PLO 1]**
2. What is problem solving? [**CLO-1][PLO 1]**
3. What are the six steps of problem solving? [**CLO-1][PLO 1]**
4. Discuss about how the problems can be solved with computers? [**CLO-1][PLO 1]**
5. What is a program? [**CLO-1][PLO 2]**
6. Why is problem analysis important? [**CLO-1][PLO 2]**
7. What are the tools of problem solving available? [**CLO-1][PLO 2]**
8. How do problem-solving tools help in leading to a solution? [**CLO-1][PLO 2]**
9. Why it is important to test a solution before coding it? [**CLO-1][PLO 2]**
10. What is an algorithm? Give the characteristics of the algorithm. [**CLO-1][PLO 2]**
11. What is a flowchart? Give the symbols/shapes used in the flowchart.

    [**CLO-1][PLO 3]**
12. Define pseudocode and give its importance with an example. [**CLO-1][PLO 2]**
13. Discuss the difficulties with problem solving in detail. [**CLO-1][PLO 2]**

14.State the use of %d and %f .Write a printf statement in C using the above mentioned symbols? [**CLO-1][PLO 4]**

15.What is main difference between variable and constant? [**CLO-1][PLO 3]**

16.Explain bitwise left shift operator? [**CLO-1][PLO 4]**

17.Explain primary data types used in C? [**CLO-1][PLO 3]**

18.Difference between formatted & unformatted statement ? [**CLO-1][PLO 3]**

19.What is mean by storage class of variable? [**CLO-1][PLO 3]**

20.Explain with example ++i and i++. [**CLO-1][PLO 4]**

21. Refer all Elab programs. [**CLO-1][PLO 3] [PLO 2][PLO 4]**

<u>12 Marks:</u>

1) Explain the evolution of programming languages. [**CLO-1][PLO 1]**
2) Explain the various steps involved in problem solving with diagram. [**CLO-1][PLO 1]**
3) Draw the flowchart and write the algorithm and c code to find the sum and to reverse the digits of given five digit number. [**CLO-1][PLO 1] [PLO2]**
4) Write an algorithm and draw a flow chart to find the factorial and Fibonacci series of given number. [**CLO-1][PLO 2] [PLO 3]**
5) Write a note on Algorithm, Flow chart and Pseudocode. [**CLO-1][PLO 3] [PLO 2]**
6) Explain the scope, lifetime of variable in C with example. [**CLO-1][PLO 2][PLO3]**
7) Write down th*e* algorithm to find the largest number among three given numbers *a*nd outline *the* steps *i*n the algorithm with the inputs 5, 17, 3. [**CLO-1][PLO 2]**[PLO3]
8) Draw flowchart to compute th*e* salary o*f an* employee *in* a company. Assume that there *are* two types of employees in the company daily wages and regular. Salary i*s* calculated as number *o*f hours worked* wages per hour for daily wagers *a*nd basic pay +(% *o*f DA * basic pay)/100 + HRA + medical allowance for regular employees. Sketch the flow o*f* your design for a regular employee with basic pay = 5000, % of DA = 75 % *and* HRA = 500. (8) [**CLO-1][PLO 2][PLO3][PLO4]**
9) Explain in details about operators with an example [**CLO-1][PLO 1] [PLO 2][PLO3]**
10) Refer all elab Programs [**CLO-1][PLO 3] [PLO 2][PLO 4]**

UNIT - II
PART A

1. The -------------------- operator is true only when both the operands are true.

   e) && b) || c)! d) ?:

   Answer: a

2. The --------------------- statement when executed in a switch statement causes immediate exit from the structure.

   a)goto b) default c) break d) switch

   Answer: c

3. The ternary conditional expression using the operator?: could be easily coded using ---------------- statement

   a)Nested if b) if-else c) if d) for

   Answer: b

4. What will be the output when the following segment is executed?

```
Char ch='a';
Switch(ch)
{
case 'a':
Printf("A");
case 'b':
Printf("B");
Default:
printf("C");
}
```

   a)A b)B c)C d) a

   Answer: a

5. What will be the output of the following segment when executed?

```
int x=10, y=20;
if((x<y)||(x+5)>10)
printf(%d",x);
else
printf(%d",y);
```

   a)10 b) 20 c) 15 d)5

   Answer: a

6. The ---------------------- statement is used to skip a part of the statements in a loop.

   a) Continue b) break c) goto d)switch

   Answer: a

7. A for loop with no test condition is known as --------------- loop

   a) Infinite b) time delay c) for d) Incrementing

   Answer: a

8. The sentinel –controlled loop is also known as -----------------------loop

    a) Indefinite repetition loop   c) time delay
    b) Definite repetition loop   d) infinite

    Answer: a

9. In an exit controlled loop the body of the loop is always executed minimum number of ------------

    a) 1 time b)2 times c) 3 times d)n times

    Answer:a

10. The while is an -------------------- loop statement.

    a) Entry-controlled b)exit-controlled c)indefinite repetition d)definite repetition

    Answer: a

11. The ------------------specification is used to read or print integers

    a)h b)l c)L d)c

    Answer: a

12. To print the data left-justified, must use ------------- in the field specification

    a) - b) + c) / d) *

    Answer: a

13. By default, the real numbers are printed with a precision of -------------- decimal.

    a)6 b)2 c)4 d)0

    Answer:a

14. The expression !(x!=y) can be replaced by the expression--------------------

    a) x!=y b) x==y c)x=!y d)!x=!y

    Answer:c

15. In a counter controlled loop, variable known as -----------------is used to count the loop operations.

    a) Counter b)sentinel c)i d)n

    Answer: a

16. Which of the following special symbol allowed in a variable name?

(a) * (asterisk) (b)| (pipeline) (c) - (hyphen) **(d) _ (underscore)**

17 . Which of the following are invalid variable names?

a) Minimum b)n$ c) Integer **d) float**

18.

```
int a=10;
++a;
a++;
Printf("%d",a);
```

a)10 b) 11 **c)12** d) 13

19.

```
int a=11;
a=a%2;
a=a/2;
```

The value of a is,

a) 1, 1 b) 5,1 c) 1,5 **d)5**

20. Which of the following is not logical operator?

A. &

B. &&

C. ||

D. !

21 Which of the following cannot be checked in a switch-case statement?

A. Character

B. Integer

C. Float

D. enum

22. What is the output of this C code?

```
int main()
{
   int a = 0, i = 0, b;
   for (i = 0;i < 5; i++)
  {
     a++;
     continue;
   }
}
```

A. 2 **B.** 3
C. 4 **D.** 5

23. What is the output of this 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

24. What is the output of this 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

25. What is the output of this C code?

```
void main()
{
    int i = 0;
    for (i = 0;i < 5; i++)
        if (i < 4)
        {
            printf("Hello");
            break;
        }
}
```

A. Hello is printed 5 times **B.** Hello is printed 4 times

C. Hello **D.** Hello is printed 3 times

27. What is the output of this C code?

```
int main()
{
    int i = 0;
    char c = 'a';
    while (i < 2){
        i++;
        switch (c) {
       case 'a':
            printf("%c ", c);
            break;
            break;
        }
    }
    printf("after loop\n");
}
```

A. a after loop

B. a a after loop

C. after loop

D. None of the mentioned

```
28. int main()
    {
        printf("before continue ");
        continue;
        printf("after continue\n");
    }
```

A. Before continue after continue

B. Before continue

C. after continue

D. Compile time error

29. What is the output of the code given below?

```
int main()
 {
   printf("%d ", 1);
    goto l1;
    printf("%d ", 2);
    l1:goto l2;
    printf("%d ", 3);
    l2:printf("%d ", 4);
}
```

A. 1   4

B. Compilation error

C. 1   2   4

D. 1   3   4

30. What is the output of code given below?

```
int main()
{
    printf("%d ", 1);
    l1:l2:
    printf("%d ", 2);
    printf("%d\n", 3);
}
```

A. Compilation error

B. 1   2   3

C. 1 2

D. 1 3

31. What will happen if in a C program you assign a value to an array element whose subscript exceeds the size of array?

A. The element will be set to 0.

B. The compiler would report an error.

C. The program may crash if some important data gets overwritten.

D. The array size would appropriately grow.

32 .In C, if you pass an array as an argument to a function, what actually gets passed?

A. Value of elements in array

B. First element of the array

C. **Base address of the array**

D. Address of the last element of array

33. Result of a logical or relational expression in C is?

A. True or False

B. 0 or 1

C. 0 if expression is false and any positive number if expression is true

D. None of the mentioned

34. What will be the value of d in the following program?

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

A. Syntax error

B. 1

C. 5

D. 10

35. What is the output of this C code?

```
int 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

36. What is meaning of following declaration ?

```
int arr[20];
```

a) Array of size 20 that can have integer address

b) None of the above

c) Integer array of size 20

d) Array of sixe 20

37. In C Programming, If we need to store word "INDIA" then syntax is as below –

a) char name[6]={‘I’,’N’,’D’,’I’,’A’,’\0’}

b) char name[6]={“I”,”N”,”D”,”I”,”A”}

c) char name[6]={‘I’,’N’,’D’,’I’,’A’}

d) char name[] ; name=”INDIA”

38. what is the way to initialize array?

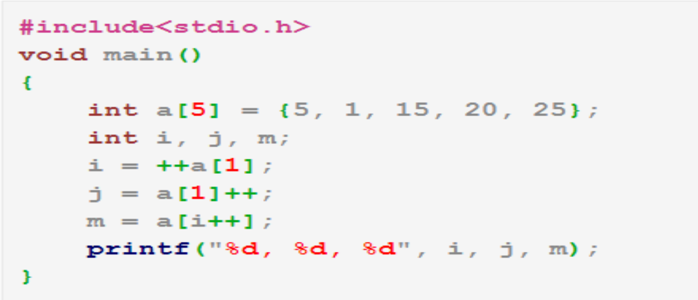
a) int num[6] = {2,4,12,5,45,5};

b) int n{} ={2,4,12,5,45,5};

c) int n{6}={2,4,12};

d) int n(6)={2,4,12,5,45,5};

39. what will be the output of the program?



```
#include<stdio.h>
void main()
{
     int a[5] = {5, 1, 15, 20, 25};
     int i, j, m;
     i = ++a[1];
     j = a[1]++;
     m = a[i++];
     printf("%d, %d, %d", i, j, m);
}
```

a) 3, 2,15

b) 2, 3, 20

c)2, 1, 15

d) 1, 2, 5

Answer: Option A

Solution:

>> int a[5] = {5, 1, 15, 20, 25}; The variable arr is declared as an integer array with a size of 5 and it is initialized to a[0] = 5, a[1] = 1, a[2] = 15, a[3] = 20, a[4] = 25.

>> int i, j, m; The variable i, j, m are declared as an integer type.

>> i = ++a[1]; becomes i = ++1; Hence i = 2 and a[1] = 2

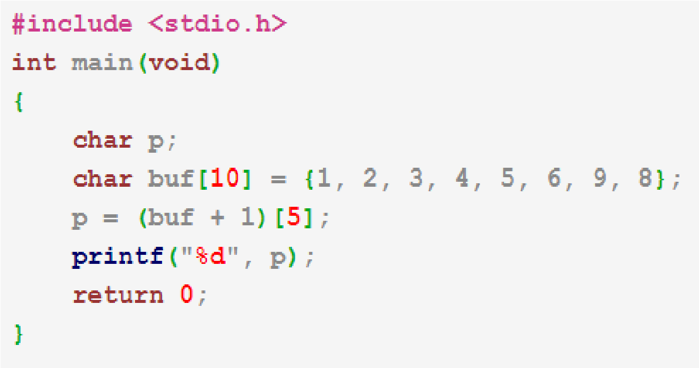
>> j = a[1]++; becomes j = 2++; Hence j = 2 and a[1] = 3.

>> m = a[i++]; becomes m = a[2]; Hence m = 15 and i is incremented by 1(i++ means 2++ so i=3)

>> printf("%d, %d, %d", i, j, m); It prints the value of the variables i, j, m

Hence the output of the program is 3, 2, 15.

39. what will be the output of the program?



```
#include <stdio.h>
int main(void)
{
    char p;
    char buf[10] = {1, 2, 3, 4, 5, 6, 9, 8};
    p = (buf + 1)[5];
    printf("%d", p);
    return 0;
}
```

a) 5

b) 6

c) 9

d) Error

e) None of the above

Answer: Option C
Solution:

x[i] is equivalent to *(x + i),

so (buf + 1)[5] is *(buf + 1 + 5), i.e. buf[6].

40) An array elements are always stored in _____________memory locations

a) sequential

b) Random

c) Sequential and Random

d) None of the above

41) Let x be an array. which of the following operations are illegal?

a) ++x b) x+1 c)x++ d) x*2

options:

a) I and II

b) I,II and III

c) II and III

d) I, III and IV

e) III and IV

Answer: Option D

Solution: int x[10]; * x will store the base address of array. *
Statement I, III and IV is invalid.

Statement I and III : ++x and x++ are throwing en error while compile **(lvalue required as increment operand)** Since, x is storing in the address of the array which is static value which cannot be change by the operand.

Statement IV : x*2 is also throw an error while compile **(invalid operands to binary * (have 'int *' and 'int'))**

Statement II : x+1 is throw a warning: **assignment makes integer from pointer without a cast [enabled by default]**

42) what is the maximum number of dimensions an array in c may have?

a) 2

b) 8

c) 20

d)50

e) theoretically no limit. the only practical limits are memory size and compilers

43) size of the array need not be specified, when

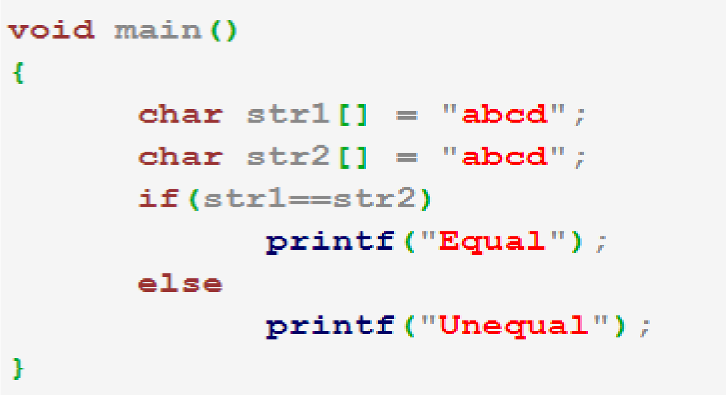
a) initialized is a part of definition

b) it's a declaration

c) it is a formal parameter

d) All of these

44) what will be the output of the program?



```
void main()
{
        char str1[] = "abcd";
        char str2[] = "abcd";
        if(str1==str2)
                printf("Equal");
        else
                printf("Unequal");
}
```

a) Equal

b) Unequal

c) Error

d) None of these

Answer: Option B
Solution:

Strings are compared using strcmp() function defined under **string.h** header file.

45)

Unit-2 PART -B

1. Give the general syntax of conditional operator?
2. Define operator in C. What role an operator plays in C program?
3. Differentiate between relational and logical operators used in C?
4. Give the types of decision making statements
5. What is the general form of switch statement?
6. Differentiate do... while.. and while... loop.
7. Determine the output of the following and justify your answer

```
int 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;
      }   return 0; }
```

8. Explain the limitations of arrays.

9. Give the steps of looping process.

10. Brief the use of continue, goto, break statement and give the syntax.

11. What are loop control structures? Explain for loop, while loop and do-while loop with their syntax.

12. What do you mean by infinite loop? Give suitable of any infinite loop in a C program.

13. Explain break and continue statements with examples.

14. Determine the output of the following program justify your answer in a few words.

```
int main() {
float f = 1.0;
 switch(f) {
          case 1.0: printf("one");     break;
          case 2.0: printf("two");     break;
          default:  prinf("%f", f);
     }}
```

15. Write a program to print series of number divisible by 3 from 1 to 100 using for loop.

16. Write a C program to print 1, 2, 4, 8, 16, 32, 64 …..N using do….while loop (Read N from user).

17. What are Arrays in C programming? Give the importance of Array in C language

13. What are the rules to declare one dimensional array?

14. What do you mean by compile time initialization? Give suitable example of Compile time initialization of C Array.

15. Describe the array index out of bound error in context of C array program.

PART C

1) Lucy is celebrating her 15th birthday. Her father promised her that he will buy her a new computer on her birthday if she solves the question asked by him. He asks Lucy to find whether the year on which she had born is leap year or not. Help her to solve this puzzle so that she celebrates her

birthday happily. **If her birth year is 2016 and it is a leap year display 2016 is a leap year.? Else display 2016 is not a leap year and check with other leap year conditions**

2) Write a C program to print the multiplication table of an integer n upto m rows using a while loop

sample input and output

```
INPUT
5
4
OUTPUT
1*5=5
2*5=10
3*5=15
4*5=20
```

3) Write a program to generate a following @s triangle:

```
@ @ @ @ @
@ @ @ @
@ @ @
@ @
@
```

4) Write a program that determines a student's grade. The program will read three scores and determine the grade based on the following rules: score =90% =>grade=A , score >= 70% and <90% => grade=B, score>=50% and <70% =>grade=C, score<50% =>grade=F

5) i)Why switch case is better than else..if... ladder. Justify.
ii)Write a program to read a value (1-7) and print the equivalent day of the week (i.e. 1-SUN, 2-MON.....)
iii) Explain briefly about for loop and Nested for loop with suitable example

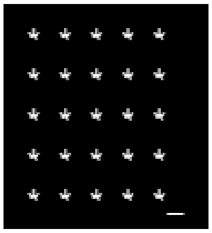
iv) Write a program to print the following pattern.

```
12345
1234
123
12
1
```

6.a. i) Write a C program to insert an element at a specified position in the array.

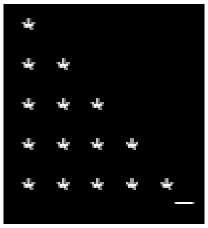
7)) Write a program to generate a following patterns

a)



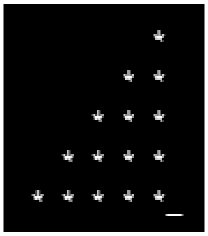
```
* * * * *
* * * * *
* * * * *
* * * * *
* * * * *_
```

b)



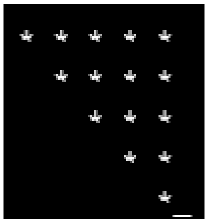
```
*
* *
* * *
* * * *
* * * * *_
```

c)



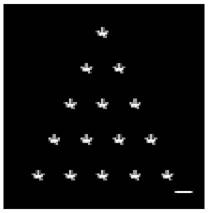
```
        *
      * *
    * * *
  * * * *
* * * * *_
```

d)



```
* * * * *
  * * * *
    * * *
      * *
        *_
```

e)



```
    *
   * *
  * * *
 * * * *
* * * * *_
```

8) write c Program for Student mark list generation by using control and looping statements

9) write c program for digit rotation. "For any positive integer, we define a digit rotation as either moving the first digit to the end of the number (left digit rotation), or the last digit to the front of the number (right digit rotation). For example, the number 12345 could be left digit rotated to 23451, or right digit rotated to 51234.

10) Write a program to find the sum of positive numbers in an array

11) write c program for palindrome strings , two strings A and B, each consisting of lower case alphabets.

12) Write a arithmetic operation menu driven program using while(1)

13) i) Write short notes on switch case.

ii) Program to create a simple calculator, Performing addition, subtraction, multiplication, division depending the input from user.

14) i)write a C program to read 10 nos. and reverse it using array

ii)Concatenate two arrays of length minimum 5 numbers.

UNIT III

PART A

1) Which of the following is not possible statically in C?

[✓ a) Jagged Array]

b) Rectangular Array

c) Cuboidal Array

d) Multidimensional Array

2) What is the output of this C code?

```
 #include <stdio.h>
void main()
     {
     int a[2][3] = {1, 2, 3, 4, 5};
     int i = 0, j = 0;
     for (i = 0; i < 2; i++)
     for (j = 0; j < 3; j++)
     printf("%d", a[i][j]);
      }
```

a) [✓ 1 2 3 4 5 0]

b) 1 2 3 4 5 junk

c) 1 2 3 4 5 5

d) Run time error

3) Predict the output of below program:

```
#include <stdio.h>

int main()
{
    int arr[5];

    // Assume that base address of arr is 2000 and size of integer
        // is 32 bit
    arr++;
    printf("%u", arr);

    return 0;
}
```

a) 2002

b) 2004

c) 2020

[✓ d) lvalue required]

4) Predict the output of below program:

```
#include <stdio.h>

int main()
{
    int arr[5];
// Assume base address of arr is 2000 and size of integer is 32 bit
    printf("%u %u", arr + 1, &arr + 1);
     return 0;
}
```

i. 2004 2020

ii. 2004 2004

iii. 2004 Garbage Value

iv. The program fails to compile because address of operator cannot be used with array name

5) **Size of the array need not be specified, when**

A.Initialization is a part of definition

B.It is a declaratrion

C.It is a formal parameter

D.All of these

6) **While passing an array as an actual argument, the function call must have the array name**

A.with empty brackets

B.with its size

C.alone

D.none of the above

7) **The parameter passing mechanism for an array is**

A.call by value

B.call by value-result

C.call by reference

D.none of these

8) **Under which of the following conditions, the size of an one-dimensional array need not be specified?**

A.when initialization is a part of definition

B.when it is a declaration

C.when it is a formal parameter and an actual argument

D.All of the above

9) **If a two dimensional array is used as a formal parameter, then**

A.both the subscripts may be left empty

B.the first (row) subscript may be left empty

C.the first subscript must be left empty

D.both the subscripts must be left empty

11) Choose the statement that best defines an array

A.It is a collection of items that share a common name

B.It is a collection of items that share a common name and occupy consecutive memory location

C.It is a collection of items of the same type and storage class that share a common name and occupy consecutive memory locations

D.None of the above

12) Choose the correct statements

A.Array stores data of the same type

B.Array can be a part of a structure

C.Array of structure is allowed

D.All of the above

13) What is the output of this C code?

```
#include <stdio.h>
void main()
{
    int a[2][3] = {1, 2, 3, 4, 5};
    int i = 0, j = 0;
    for (i = 0; i < 2; i++)
    for (j = 0; j < 3; j++)
    printf("%d", a[i][j]);
}
```

a) 1 2 3 4 5 0

b) 1 2 3 4 5 junk

c) 1 2 3 4 5 5

d) Run time error

Answer: a

14) What is the output of this C code?

```
#include <stdio.h>
void main()
{
    int a[2][3] = {1, 2, 3, , 4, 5};
    int i = 0, j = 0;
    for (i = 0; i < 2; i++)
    for (j = 0; j < 3; j++)
    printf("%d", a[i][j]);
}
```

a) 1 2 3 junk 4 5

b) Compile time error

c) 1 2 3 0 4 5

d) 1 2 3 3 4 5

Answer: b

15. What is the output of this C code?

```
#include <stdio.h>
void f(int a[][3])
{
    a[0][1] = 3;
    int i = 0, j = 0;
    for (i = 0; i < 2; i++)
    for (j = 0; j < 3; j++)
    printf("%d", a[i][j]);
}
void main()
{
    int a[2][3] = {0};
    f(a);
}
```

a) 0 3 0 0 0 0

b) Junk 3 junk junk junk junk

c) Compile time error

d) All junk values

Answer: a

16. What is the output of this C code?

```
#include <stdio.h>
void f(int a[][])
```

```
{
    a[0][1] = 3;
    int i = 0, j = 0;
    for (i = 0;i < 2; i++)
    for (j = 0;j < 3; j++)
    printf("%d", a[i][j]);
}
void main()
{
    int a[2][3] = {0};
    f(a);
}
```

a) 0 3 0 0 0 0

b) Junk 3 junk junk junk junk

c) Compile time error

d) All junk values

Answer: c

17. What is the output of this C code?

```
#include <stdio.h>
void f(int a[2][])
{
    a[0][1] = 3;
    int i = 0, j = 0;
    for (i = 0;i < 2; i++)
    for (j = 0;j < 3; j++)
    printf("%d", a[i][j]);
}
void main()
{
    int a[2][3] = {0};
    f(a);
}
```

a) 0 3 0 0 0 0

b) Junk 3 junk junk junk junk

c) Compile time error

d) All junk values

Answer: c

18. Comment on the following statement:

```
int (*a)[7];
```

a) An array “a” of pointers.

b) A pointer “a” to an array.

c) A ragged array.

d) None of the mentioned

Answer: b

19. Comment on the 2 arrays regarding P and Q:

```
int *a1[8];
int *(a3[8]);
P. Array of pointers
Q. Pointer to an array
```

a) a1 is P, a2 is Q

b) a1 is P, a2 is P

c) a1 is Q, a2 is P

d) a1 is Q, a2 is Q

Answer: b

20. Which of the following is not possible statically in C?

a) Jagged Array

b) Rectangular Array

c) Cuboidal Array

d) Multidimensional Array

Answer: a

21. What is the correct syntax to send a 3-dimensional array as a parameter? (Assuming declaration int a[5][4][3];)

a) func(a);

b) func(&a);

c) func(*a);

d) func(**a);

Answer: a

22. Applications of multidimensional array are?

a) Matrix-Multiplication

b) Minimum Spanning Tree

c) Finding connectivity between nodes

d) All of the mentioned

Answer: d

23. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int ary[2][3];
    foo(ary);
}
void foo(int *ary[])
{
    int i = 10, j = 2, k;
    ary[0] = &i;
    ary[1] = &j;
    *ary[0] = 2;
    for (k = 0;k < 2; k++)
    printf("%d\n", *ary[k]);
}
```

a) 2 2

b) Compile time error

c) Undefined behaviour

d) 10 2

Answer: a

24. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int ary[2][3];
    foo(ary);
}
void foo(int (*ary)[3])
{
    int i = 10, j = 2, k;
    ary[0] = &i;
    ary[1] = &j;
    for (k = 0;k < 2; k++)
    printf("%d\n", *ary[k]);
}
```

a) Compile time error

b) 10 2

c) Undefined behaviour

d) segmentation fault/code crash

Answer: a

25. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    foo(ary);
}
void foo(int **ary)
{
    int i = 10, k = 10, j = 2;
    int *ary[2];
    ary[0] = &i;
    ary[1] = &j;
    printf("%d\n", ary[0][1]);
}
```

a) 10

b) 2

c) Compile time error

d) Undefined behaviour

Answer: d

26. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int ary[2][3][4], j = 20;
    ary[0][0] = &j;
    printf("%d\n", *ary[0][0]);
}
```

a) Compile time error

b) 20

c) Address of j

d) Undefined behaviour

Answer: a

27. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int ary[2][3];
    ary[][] = {{1, 2, 3}, {4, 5, 6}};
    printf("%d\n", ary[1][0]);
}
```

a) Compile time error

b) 4

c) 1

d) 2

Answer: a

28. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    void foo();
    printf("1 ");
    foo();
}
void foo()
{
    printf("2 ");
}
```

a) 1 2

b) Compile time error

c) 1 2 1 2

d) Depends on the compiler

Answer: a

29. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    void foo(), f();
    f();
}
void foo()
{
    printf("2 ");
}
void f()
{
    printf("1 ");
    foo();
}
```

a) Compile time error as foo is local to main

b) 1 2

c) 2 1

d) Compile time error due to declaration of functions inside main

Answer: b

30. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    void foo();
    void f()
    {
        foo();
    }
    f();
}
void foo()
{
    printf("2 ");
}
```

a) 2 2

b) 2

c) Compile time error

d) Depends on the compiler

Answer: d
Explanation: Even though the answer is 2, this code will compile fine only with gcc. GNU C supports nesting of functions in C as a language extension whereas standard C compiler doesn’t.

31. What is the output of this C code?

```
#include <stdio.h>
void foo();
int main()
{
    void foo();
    foo();
    return 0;
}
void foo()
{
    printf("2 ");
}
```

a) Compile time error

b) 2

c) Depends on the compiler

d) Depends on the standard

Answer: b

32. What is the output of this C code?

```
#include <stdio.h>
void foo();
int main()
{
    void foo(int);
    foo(1);
    return 0;
}
void foo(int i)
{
    printf("2 ");
}
```

a) 2

b) Compile time error

c) Depends on the compiler

d) Depends on the standard

Answer: a

33. What is the output of this C code?

```
#include <stdio.h>
void foo();
int main()
{
    void foo(int);
    foo();
    return 0;
}
void foo()
{
    printf("2 ");
}
```

a) 2

b) Compile time error

c) Depends on the compiler

d) Depends on the standard

Answer: b

34. What is the output of this C code?

```
include <stdio.h>
void m()
{
    printf("hi");
}
void main()
{
    m();
}
```

a) hi

b) Run time error

c) Nothing

d) Varies

Answer: a

35. What is the output of this C code?

```
#include <stdio.h>
void m();
void n()
{
    m();
}
void main()
{
    void m()
    {
        printf("hi");
    }
}
```

a) hi

b) Compile time error

c) Nothing

d) Varies

Answer: b

36. What is the return-type of the function sqrt()

a) int

b) float

c) double

d) depends on the data type of the parameter

Answer: c

37. Which of the following function declaration is illegal?

```
a) double func();
   int main(){}
   double func(){}
b) double func(){};
   int main(){}
c) int main()
   {
       double func();
   }
   double func(){//statements}
d) None of the mentioned
```

Answer: d

38. What is the output of this code having void return-type function?

```
#include <stdio.h>
void foo()
{
    return 1;
}
void main()
{
    int x = 0;
    x = foo();
    printf("%d", x);
}
```

a) 1

b) 0

c) Runtime error

d) Compile time error

Answer: d

39. What will be the data type returned for the following function?

```
#include <stdio.h>
int func()
{
    return (double)(char)5.0;
}
```

a) char

b) int

c) double

d) multiple type-casting in return is illegal

Answer: b

40. What is the problem in the following declarations?

```
 int func(int);
 double func(int);
 int func(float);
```

a) A function with same name cannot have different signatures

b) A function with same name cannot have different return types

c) A function with same name cannot have different number of parameters

d) All of the mentioned

Answer: d

41. The output of the code below is

```
#include <stdio.h>
void main()
{
    int k = m();
    printf("%d", k);
}
void m()
{
    printf("hello");
}
```

a) hello 5

b) Error

c) Nothing

d) Junk value

Answer: a

42. The output of the code below is

```
#include <stdio.h>
int *m()
{
    int *p = 5;
    return p;
}
```

```
void main()
{
    int *k = m();
    printf("%d", k);
}
```

a) 5

b) Junk value

c) 0

d) Error

Answer: a

43. The output of the code below is

```
#include <stdio.h>
int *m();
void main()
{
    int *k = m();
    printf("hello ");
    printf("%d", k[0]);
}
int *m()
{
    int a[2] = {5, 8};
    return a;
}
```

a) hello 5 8

b) hello 5

c) hello followed by garbage value

d) Compilation error

Answer: c

Part B

1. What is the need for user defined function?

2. Write a multi function program

3. List the Elements of user defined function

4. Give short note on 2-D array processing.
5. Write a C program to find the length of a string.
6. HELLO encode it as IFMMP using array
7. Show the difference between actual and formal parameter in function with piece of code

8. Compare user define function vs System define function

9. List categories of function

10. Explain the concept of function call by reference with a sample program.

11. Explain the concept of function call by value with a sample program

12. Explain about functions with example

13. Discuss Character Arrays

14. Predict output of the following program (CLO3)

```
int main(){
inta[][]={{1,2},(3,4}};
int i,j;
for (i=0;i<2;i++)
for(j=0;j<2;j++)
printf("%d",a[i][j]);
retorn 0;
}
```

15. Why array index starts from zero?
16. Contrast function declaration vs function definition.
17. List the advantages of functions.
18. Program to Find the 2nd Largest Elements in an Array.
19. Write a program to convert the given string (srm university) Lower to upper case

20. Advantages and limitations of multi dimensional array initialization

21. Explain call by value and call by reference with an example

22. Common programming errors in 2D arrays

12. Explain String functions with example

PART C

1. Array construction for student mark list for 100 students. output need to display register number, marks of five subjects , CGPA and PASS/Fail Status

2. Explain in details about String Functions: gets(), puts(), getchar(), putchar(), printf(), with an example programs

3. i)Print the given pattern using 2-D array

```
1234567
 23456
```

345
4

ii) Program to divide one array into two arrays

4. i) What are strings in C? Write a C program to read a string in lowercase and convert it to uppercase.

ii)) Illustrate call by value and call by reference with example for each.

5. i) Find the factorial of 10 using function recursion.

ii) What is a string? Explain any 5 string functions.

6. Explain in details about String Functions: atoi, strlen, strcat, strcmp with an example

7. Functions declaration and definition, Types: Call by Value & Call by Reference with example programs

8. Explain and write c program for Function with and without Arguments and no Return Values

9. Explain and write c program for Passing Array to Functions with return type, Recursion Functions

10. Write c program for Matrix Multiplication using Multi-dimensional array

11. Program to Delete duplicate elements from an array

```
INPUT
1 3 4 5 3
OUTPUT
1 3 4 5
```

b. Write a program to perform Matrix addition and Multiplication using 2-D arrays

12. i) State the importance of functions. List out the different types of Function

ii) Write a swap function using call by value and call by reference

iii) Write a C program to concatenate two strings.

iv) Write a program to read to strings and compare them and print a message that the first string is equal, less or greater than the second one accordingly.

13. Write c program for Matrix addition and Matrix Transpose using multi dimensional array

14. Given a number , find whether it is a power of 2 or not

15. Write a C program to swap elements in cyclic order using call by reference.

UNIT 4

1. What is the output of this C code?

```
#include <stdio.h>
void foo(int*);
int main()
{
    int i = 10;
    foo((&i)++);
}
void foo(int *p)
{
            printf("%d\n", *p);
        }
```

a) 10

b) Some garbage value

c) Compile time error

d) Segmentation fault/code crash

Answer: c

2. What is the output of this C code?

```
#include <stdio.h>
void foo(int*);
int main()
{
    int i = 10, *p = &i;
    foo(p++);
}
void foo(int *p)
{
            printf("%d\n", *p);
        }
```

a) 10

b) Some garbage value

c) Compile time error

d) Segmentation fault

Answer: a

3. What is the output of this C code?

```
#include <stdio.h>
void foo(float *);
int main()
{
    int i = 10, *p = &i;
    foo(&i);
}
void foo(float *p)
{
            printf("%f\n", *p);
        }
```

a) 10.000000

b) 0.000000

c) Compile time error

d) Undefined behaviour

Answer: b

4. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int i = 97, *p = &i;
    foo(&i);
    printf("%d ", *p);
}
void foo(int *p)
{
            int j = 2;
            p = &j;
            printf("%d ", *p);
        }
```

a) 2 97

b) 2 2

c) Compile time error

d) Segmentation fault/code crash

Answer: a

5. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int i = 97, *p = &i;
    foo(&p);
    printf("%d ", *p);
    return 0;
}
void foo(int **p)
        {
            int j = 2;
            *p = &j;
            printf("%d ", **p);
        }
```

a) 2 2

b) 2 97

c) Undefined behaviour

d) Segmentation fault/code crash

Answer: a

6. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int i = 11;
    int *p = &i;
    foo(&p);
    printf("%d ", *p);
}
void foo(int *const *p)
        {
            int j = 10;
            *p = &j;
            printf("%d ", **p);
        }
```

a) Compile time error

b) 10 10

c) Undefined behaviour

d) 10 11

Answer: a

7. What is the output of this C code?

```
#include <stdio.h>
int main()
{
    int i = 10;
    int *p = &i;
    foo(&p);
    printf("%d ", *p);
    printf("%d ", *p);
}
        void foo(int **const p)
        {
            int j = 11;
            *p = &j;
            printf("%d ", **p);
        }
```

a) 11 11 11

b) 11 11 Undefined-value

c) Compile time error

d) Segmentation fault/code-crash

Answer: b

8. What is the output of the code below?

```
#include <stdio.h>
int main()
{
    int i = 10;
    int *const p = &i;
    foo(&p);
    printf("%d\n", *p);
}
void foo(int **p)
        {
            int j = 11;
            *p = &j;
            printf("%d\n", **p);
        }
```

a) 11 11

b) Undefined behaviour

c) Compile time error

d) Segmentation fault/code-crash

Answer: a

9. Which of the following are correct syntaxes to send an array as a parameter to function:

a) func(&array);

b) func(#array);

c) func(*array);

d) func(array[size]);

Answer: a.

11. What is the output of this C code?

```
#include <stdio.h>
void main()
{
    int k = 5;
    int *p = &k;
    int **m  = &p;
    printf("%d%d%d\n", k, *p, **m);
}
```

a) 5 5 5

b) 5 5 junk value

c) 5 junk junk

d) Run time error

Answer: a

12. What is the output of this C code?

```
#include <stdio.h>
void main()
{
    int k = 5;
    int *p = &k;
    int **m  = &p;
    printf("%d%d%d\n", k, *p, **p);
}
```

a) 5 5 5

b) 5 5 junk value

c) 5 junk junk

d) Compile time error

Answer: d.

13. What is the output of this C code?

```
#include <stdio.h>
void main()
{
    int k = 5;
    int *p = &k;
    int **m  = &p;
    **m = 6;
    printf("%d\n", k);
}
```

a) 5

b) Compile time error

c) 6

d) Junk

Answer: c

14. What is the output of this C code?

```
#include <stdio.h>
void main()
{
    int a[3] = {1, 2, 3};
    int *p = a;
    int *r = &p;
    printf("%d", (**r));
}
```

a) 1

b) Compile time error

c) Address of a

d) Junk value

Answer: b

15. What is the output of this C code?

```
#include <stdio.h>
void main()
{
        int a[3] = {1, 2, 3};
        int *p = a;
        int **r = &p;
        printf("%p %p", *r, a);
    }
```

a) Different address is printed

b) 1 2

c) Same address is printed.

d) 1 1

View Answer

Answer: c
Explanation: None.

16. How many number of pointer (*) does C have against a pointer variable declaration?

a) 7

b) 127

c) 255

d) No limits.

Answer: d

17. What is the output of this C code?

```
    #include <stdio.h>
    int main()
    {
        int a = 1, b = 2, c = 3;
        int *ptr1 = &a, *ptr2 = &b, *ptr3 = &c;
        int **sptr = &ptr1; //-Ref
        *sptr = ptr2;
    }
```

a) ptr1 points to a

b) ptr1 points to b

c) sptr points to ptr2

d) None of the mentioned

Answer: b

18. What is the output of this C code?

```
    #include <stdio.h>
    void main()
    {
        int a[3] = {1, 2, 3};
        int *p = a;
        int **r = &p;
        printf("%p %p", *r, a);
    }
```

a) Different address is printed

b) 1 2

c) Same address is printed.

d) 1 1

Answer: c

PART B

1) short notes on Passing Array Element to Function with an example
2) Explain Formal and Actual Parameters
3) Give the Advantages of using Functions ,
4) example program for Processor Directives and #define Directives
5) write a program for Pointer Declaration and dereferencing,
6) write a program for pointers, Void Pointers and size of Void Pointers
7. Write algorithm and pseudo code for leap year calculation. [CLO 1]
8. Contrast the declaration of break and continue in while and for loop with justification [CLO 2]
9. Limitations of two dimensional arrays.

PART C

1) i) c program to read array elements and print the values with their address
ii) what is Pointers and address operator, explain with an example of Size of Pointer Variable and Pointer, Operator

2) Explain in details with an example Pointer Declaration and dereferencing, pointers, Void Pointers and size of Void Pointers

3) write program for Arithmetic Operations, Incrementing Pointers

4) what is Constant Pointers, Pointers to array elements and strings

5)what is function pointer & Array of Function Pointers with an example

6write the c program for Accessing Array of Function Pointers, Null Pointers

7) Justify and explain the different size of data types using pointer variables with example program.

8) i) write a c program to count vowels and consonants in a string using pointer

ii) Write call by reference and call by value with an example program

UNIT 5

Part A

1. Which of the following are themselves a collection of different data types?

a) string

b) structures

c) char

d) all of the mentioned

View Answer

Answer: b
Explanation: None.

2. User-defined data type can be derived by___________

a) struct

b) enum

c) typedef

d) all of the mentioned

Answer: d

3. Which operator connects the structure name to its member name?

a) –

b) <-

c) .

d) Both <- and .

Answer: c

4. Which of the following cannot be a structure member?

a) Another structure

b) Function

c) Array

d) None of the mentioned

Answer: b

5. Which of the following structure declaration will throw an error?

```
a) struct temp{}s;
   main(){}
b) struct temp{};
   struct temp s;
   main(){}
c) struct temp s;
   struct temp{};
   main(){}
d) None of the mentioned
```

Answer: d

6. What is the output of this C code?

```
#include <stdio.h>
struct student
{
    int no;
    char name[20];
}
void main()
{
    struct student s;
            s.no = 8;
            printf("hello");
        }
```

a) Compile time error

b) Nothing

c) hello

d) Varies

Answer: a

7. What is the output of this C code?

```
#include <stdio.h>
struct student
{
    int no = 5;
    char name[20];
};
void main()
```

```
{
    struct student s;
            s.no = 8;
            printf("hello");
        }
```

a) Nothing

b) Compile time error

c) hello

d) Varies

Answer: b

8. What is the output of this C code?

```
#include <stdio.h>
struct student
{
    int no;
    char name[20];
};
void main()
{
    student s;
            s.no = 8;
            printf("hello");
        }
```

a) Nothing

b) hello

c) Compile time error

d) Varies

Answer: c

9. What is the output of this C code?

```
#include <stdio.h>
void main()
{
    struct student
    {
        int no;
        char name[20];
    };
    struct student s;
```

```
            s.no = 8;
            printf("%d", s.no);
        }
```

a) Nothing

b) Compile time error

c) Junk

d) 8

Answer: d

10. Can the above code be compiled successfully?

```
#include <stdio.h>
struct p
{
    int k;
    char c;
    float f;
};
int main()
{
            struct p x = {.c = 97, .f = 3, .k = 1};
            printf("%f\n", x.f);
        }
```

a) Yes

b) No

c) Depends on the standard

d) Depends on the platform

Answer: c

11. What is the output of this C code?

```
#include <stdio.h>
void main()
{
    struct student
    {
        int no;
        char name[20];
    };
    struct student s;
```

```c
            no = 8;
            printf("%d", no);
        }
```

a) Nothing

b) Compile time error

c) Junk

d) 8

Answer: b

12. Number of bytes in memory taken by the below structure is

```c
#include <stdio.h>
struct test
{
    int k;
    char c;
};
```

a) Multiple of integer size

b) integer size+character size

c) Depends on the platform

d) Multiple of word size

Answer: a

13. What is the output of this C code?

```c
#include <stdio.h>
struct
{
    int k;
    char c;
};
int main()
{
    struct p;
            p.k = 10;
            printf("%d\n", p.k);
        }
```

a) Compile time error

b) 10

c) Undefined behaviour

d) Segmentation fault

14. What is the output of this C code?

```
#include <stdio.h>
struct
{
    int k;
    char c;
} p;
int p = 10;
int main()
{
            p.k = 10;
            printf("%d %d\n", p.k, p);
        }
```

a) Compile time error

b) 10 10

c) Depends on the standard

d) Depends on the compiler

Answer: a

15. What is the output of this C code?

```
#include <stdio.h>
struct p
{
    int k;
    char c;
};
int p = 10;
int main()
{
            struct p x;
            x.k = 10;
            printf("%d %d\n", x.k, p);
        }
```

a) Compile time error

b) 10 10

c) Depends on the standard

d) Depends on the compiler

Answer: b

16. What is the output of this C code?

```c
#include <stdio.h>
struct p
{
    int k;
    char c;
    float f;
};
int p = 10;
int main()
        {
            struct p x = {1, 97};
            printf("%f %d\n", x.f, p);
        }
```

a) Compile time error

b) 0.000000 10

c) Somegarbage value 10

d) 0 10

Answer: b

17. What is the output of this C code(according to C99 standard)?

```c
#include <stdio.h>
struct p
{
    int k;
    char c;
    float f;
};
int main()
{
            struct p x = {.c = 97, .f = 3, .k = 1};
            printf("%f\n", x.f);
        }
```

a) 3.000000

b) Compile time error

c) Undefined behaviour

d) 1.000000

Answer: a

18. What is the output of this C code(according to C99 standard)?

```
#include <stdio.h>
   struct p
   {
       int k;
       char c;
       float f;
   };
   int main()
   {
               struct p x = {.c = 97, .k = 1, 3};
               printf("%f \n", x.f);
           }
```

a) 3.000000

b) 0.000000

c) Compile time error

d) Undefined behaviour

Answer: b

19. What is the output of this C code(according to C99 standard)?

```
   #include <stdio.h>
   struct p
   {
       int k;
       char c;
       float f;
   };
   int main()
   {
               struct p x = {.c = 97};
               printf("%f\n", x.f);
           }
```

a) 0.000000

b) Somegarbagevalue

c) Compile time error

d) None of the mentioned

Answer: a

PART B

1. Write algorithm and pseudo code for leap year calculation.
2. Contrast the declaration of break and continue in while and for loop with justification
3. Limitations of two dimensional arrays.
4. Explain about nested pre-processor MACRO
5. Categorize the basic operations that can be performed on a file with suitable declarations.
6. Write a c program to demonstrate double pointer for accessing the value of another pointer
7. Explain about file operations and mode with syntax.

8) explain shortly about Initializing Structure, Declaring structure, variable,
9) give the example of Structure using typedef, Accessing members
10)what is Nested structure, Accessing elements in a structure array,
11)write c program for Array of structure, Accessing elements in a structure array
12. Explain about file operations and mode with syntax.
13. Give a brief note about preprocessor directives.
14. Differentiate between a union and a structure.
15.Write a program to read a file character by character, and display it simultaneously on the screen
16) write a program for Passing Array of structure to function,
17)write a program for Array of pointers to structures
18. Explain about nested pre-processor MACRO
19. Categorize the basic operations that can be performed on a file with suitable declarations.
20.Write a c program to demonstrate double pointer for accessing the value of another pointer

PART C

1) explain in details about Bit Manipulation to structure and Pointer, to structure, Union Basic and declaration with an example

2) explain in details about Accessing Union Members Pointers to Union, Dynamic memory allocation, mallaoc, realloc, free with an example

3) explain in details about Allocating Dynamic Array, Multidimensional array using dynamic memory allocation with an example
4) Explain in details about array of structures and accessing elements in a structure array.

5)Write a c program to insert a line at the end of text file
6) write a program to copy the content from one file to another file
7) explain and write the program for library management system using union

8) write a c program for file: opening, defining, closing, File Modes, File Types, Writing contents into a file

9) write a c program for Reading file contents, Appending an existing file

10)Differentiate between gets() and scanf()

(11)Write a program to convert the given string "hello world" to "dlrow olleh".

12. Write a program that passes a pointer to a structure to a function

13 Briefly discuss about file operations in C

14) c program to read array elements and print the values with their address

15) Justify and explain the different size of data types using pointer variables with example program.

16) write a c program to count vowels and consonants in a string using pointer

17) Write call by reference and call by value with an example program

18) a) i) Explain in details about array of structures and accessing elements in a structure array.

ii) Write a c program to insert a line at the end of text file

19) i) write a program to copy the content from one file to another file

ii) explain and write the program for library management system using   union