

MIDTERM EXAMINATION

Fall 2008

CS201- Introduction to Programming (Session - 2)

Time: 60 min

Marks: 38

Question No: 1 (Marks: 1) - Please choose one**What is the output of the following statement?**

```
int i = 2.5; do { cout << i * 2; } while (i > 3 && i < 10);
```

- (a) 510
- (b) 5
- (c) 48
- (d) **error**

Question No: 2 (Marks: 1) - Please choose one

What does !(7) evaluate to in decimal where ! is a NOT operator?

- (a) 7
- (b) 8
- (c) 9
- (d) 10

Question No: 3 (Marks: 1) - Please choose one

The condition in while loop may contain logical expression but not relational expression.

- (a) True
- (b) False

Question No: 4 (Marks: 1) - Please choose one

Searching is easier when an array is already sorted

- (a) **True**
- (b) False

Question No: 5 (Marks: 1) - Please choose one

If an array has 100 elements, what is allowable range of subscripts?

- (a) **0 - 99**
- (b) 1 - 99
- (c) 0 - 100
- (d) 1 - 100

Question No: 6 (Marks: 1) - Please choose one**What will be the value of 'a' and 'b' after executing the following statements?**

```
a = 3;  
b = a++;
```

- (a) 3, 4

- (b) 4, 4
- (c) 3, 3
- (d) 4, 3**

Question No: 7 (Marks: 1) - Please choose one

What will be the correct syntax to initialize all elements of two-dimensional array to value 0?

- (a) `int arr[2][3] = {0,0} ;`
- (b) `int arr[2][3] = {{0},{0}} ;`**
- (c) `int arr[2][3] = {0},{0} ;`
- (d) `int arr[2][3] = {0} ;`

Question No: 8 (Marks: 1) - Please choose one

Which of the following function returns the size of a string variable?

- (a) `strlen()`
- (b) `stringlen()`
- (c) `strlen()`**
- (d) `strLength()`

Question No: 9 (Marks: 1) - Please choose one

What will be the range of numbers generated by function `rand () % 9`?

- (a) 0 to 9
- (b) 1 to 9
- (c) 0 to 8
- (d) 1 to 8

Question No: 11 (Marks: 1) - Please choose one

Computer can understand only machine language code.

- (c) True**
- (d) False

Question No: 13 (Marks: 1) - Please choose one

What does $5 \wedge 6$, evaluate to in decimal where '^' is Exclusive OR operator?

- (a) True
- (b) False**

Detail:-

It mean

$$5 = 0101$$

$$6 = 0110$$

$$5 \wedge 6 = 0011$$

If both input is same then the output is 0 and if different then output is 1

Question No: 14 (Marks: 1) - Please choose one

If the file is not properly closed in the program, the program _____.

- (a) **Terminate normally**
- (b) Indicate Runtime error
- (c) Indicate Compile time error
- (d) Crashes

Question No: 15 (Marks: 1) - Please choose one

Which of the following header file include string conversion functions?

- (a) **string.h**
- (b) stdlib.h
- (c) ctype.h
- (d) sconvert.h

Question No: 16 (Marks: 1) - Please choose one

In Program commenting the code liberally is

Solution:-

It need to be self-contained and understandable. Comments should be placed liberally. The comments should explain the logic, not the mechanics. Try to avoid fancy programming.

Question No: 17 (Marks: 1)

Which header file must be included while handling files?

Solution:-
<fstream.h>

Question No: 18 (Marks: 1)

What is meant by C++ statement: `const int *ptr = &x;`

Solution:-

ptr is a pointer to data of type const int type. And to assign the address of x to pointer ptr

Question No: 19 (Marks: 2)

What is a truth Table?

Solution:-

We know the concept of truth table. The truth tables are very important. These are still a tool available for analyzing logical expressions. We will read logic design in future, which is actually to do with chips and gate. We find it difficult to evaluate a complicated logical expression. Sometimes the logic becomes extremely complicated so that even writing it as a simple syntax statement in any language.

Question No: 20 (Marks: 3)

(1) An array day is declared as: `int day[] = {1, 2, 3, 4, 5, 6, 7};`

How many elements does array 'day' has?

Solution:-

7 elements

(2) If the declaration is changed as: `int day[7] = {1, 2, 3, 4, 5, 6, 7};`

How many elements does array 'day' has?

Solution:-

7 elements

Question No: 21 (Marks: 5)

What are similarities and differences between Structures and Unions?

In structures, we have different data members and all of these have their own memory space. In union, the memory location is same while the first data member is one name for that memory location. However, the 2nd data member is another name for the same location and so on. Consider the above union (i.e. `intOrChar`) that contains an integer and a character as data members. What will be the size of this union? The answer is the very simple. The union will be allocated the memory equal to that of the largest size data member. If the `int` occupies four bytes on our system and `char` occupies one byte, the union `intOrChar` will occupy four bytes

Question No: 22 (Marks: 10)

Write a **void function()**; that takes integer numbers from the user and then displays the sum of odd and even numbers entered by the user. Your program should terminate if user enters a negative number

Solution:-

```
#include<iostream.h>
#include<conio.h>
void function(void);
main()
{
    function();

    getch();
}
void function(void)
{
    int n[5];
    for(int i=0; i<=5; i++)
    {
        cout <<"Enter Element = ";
        cin >>n[i];
    }
    cout <<"\nODD Inputs are = \n";
    for(int i=0; i<=5; i++)
    {
```

```
        if(n[i]%2==0)
        {
            cout <<n[i]<<endl;
        }
    }
    cout <<"\nEVEN Inputs are = \n";
    for(int i=0; i<=5; i++)
    {
        if(n[i]%2==1)
        {
            cout <<n[i]<<endl;
        }
    }
}
```

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Question No: 1 (Marks: 1) - Please choose one

The function of cin is

- (a) To display message
- (b) To read data from keyboard**
- (c) To display output on the screen
- (d) To send data to printer

Question No: 2 (Marks: 1) - Please choose one

In C/C++ language the header file which is used to perform useful task and manipulation of character data is

- (a) cplex.h
- (b) ctype.h**
- (c) stdio.h
- (d) delay.h

Question No: 3 (Marks: 1) - Please choose one

How many parameter(s) function getline() takes?

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

Question No: 4 (Marks: 1) - Please choose one

Word processor is

- (a) Operating system
- (b) Application software**
- (c) Device driver
- (d) Utility software

Question No: 5 (Marks: 1) - Please choose one

For which values of the integer `_value` will the following code becomes an infinite loop?

```
int number=1;
while (true) {
    cout << number;
    if (number == 3) break;
    number += integer_value; }
```

- (a) any number other than 1 or 2
- (b) only 0
- (c) only 1
- (d) only 2

Question No: 6 (Marks: 1) - Please choose one

Each pass through a loop is called a/an

- (a) enumeration
- (b) Iteration**
- (c) culmination
- (d) pass through

Question No: 7 (Marks: 1) - Please choose one

A continue statement causes execution to skip to

- (a) the return 0; statement
- (b) the first statement after the loop
- (c) the statements following the continue statement
- (d) the next iteration of the loop

Question No: 8 (Marks: 1) - Please choose one

What is the correct syntax to declare an array of size 10 of int data type?

- (a) `int [10] name ;`
- (b) `name[10] int ;`
- (c) `int name[10] ;`**

(d) `int name[] ;`

Question No: 9 (Marks: 1) - Please choose one

Consider the following code segment. What will the following code segment display?

```
int main(){  
int age[10] = {0};  
cout << age ;  
}
```

- (a) Values of all elements of array
- (b) Value of first element of array
- (c) Starting address of array
- (d) Address of last array element

Question No: 10 (Marks: 1) - Please choose one

What will be the correct syntax to initialize all elements of two-dimensional array to value 0?

- (a) `int arr[2][3] = {0,0} ;`**
- (b) `int arr[2][3] = {{0},{0}} ;`
- (c) `int arr[2][3] = {0},{0} ;`
- (d) `int arr[2][3] = {0} ;`

Question No: 11 (Marks: 1) - Please choose one

How many bytes will the pointer *intPtr* of type `int` move in the following statement?

```
intPtr += 3 ;
```

- (a) 3 bytes
- (b) 6 bytes
- (c) 12 bytes
- (d) 24 bytes

Question No: 12 (Marks: 1) - Please choose one

If there are $2^{(n+1)}$ elements in an array then what would be the number of iterations required to search a number using binary search algorithm?

- (a) n elements
- (b) $n+1$ elements
- (c) $2(n+1)$ elements
- (d) $2^{(n+1)}$ elements

Question No: 13 (Marks: 1) - Please choose one

Which of the following operator is used to access the value of variable pointed to by a pointer?

- (a) * operator
- (b) -> operator
- (c) && operator
- (d) **& operator**

Question No: 14 (Marks: 1) - Please choose one

The _____ statement interrupts the flow of control.

- (a) switch
- (b) continue
- (c) goto
- (d) break

Question No: 15 (Marks: 1) - Please choose one

Analysis is the ----- step in designing a program

- (a) Last
- (b) Middle
- (c) Post Design
- (d) **First**

Question No: 16 (Marks: 1) - Please choose one

Paying attention to detail in designing a program is _____

- (a) Time consuming
- (b) Redundant
- (c) **Necessary**
- (d) Somewhat Good

Question No: 17 (Marks: 1)

Which programming tool is helpful in tracing the logical errors?

Debugger tool is helpful in tracing the logical errors.

Question No: 18 (Marks: 1)

Give the syntax of opening file 'myFile.txt' with 'app' mode using ofstream variable 'out'.

```
ofstream outfile;  
outfile.open ("myFile.txt "); // Open the file
```


Question No: 19 (Marks: 2)

What is the difference between **switch** statement and **if** statement.

In switch statement only one variable can be tested on various condition but using if we can tested multi variables in single statement.

Question No: 20 (Marks: 3)

Identify the errors in the following code segment and give the reason of errors.

```
main(){
int x = 10
const int *ptr = &x ;
*ptr = 5 ;
}
```

```
main()
{
int x = 10;
const int *ptr = &x ;

cout <<ptr;

}
```

Question No: 21 (Marks: 5)

If int array[10]; is an integer array then write the statements which will store values at Fifth and Ninth location of this array,

```
cout <<"Enter fifth postion ";
cin >> array[4];
cout <<"Enter Ninth postion ";
cin >> array[8];
```

Question No: 22 (Marks: 10)

Write a function BatsmanAvg which calculate the average of a player (Batsman), Call this function in main program (Function). Take the input of Total Runs made and Total number of matches played from the user in main function

Q1

When the if statement consists more than one statement then enclosing these

statement in curly braces is,

- (a) Not required
- (b) Good programming
- (c) Relevant
- (d) Must**

Q2

The while loop becomes infinite,

- (a) When the condition is always false
- (b) . When the condition is less than zero
- (c) When the condition is always true**
- (d) When the condition contains a logical operator

Q3

Which of the following function(s) is/are included in **stdlib.h** header file?

- (a) double atof(const char *nptr)
- (b) int atoi(const char *nptr)
- (c) char *strcpy (char *s1, const char *s2)
- (d) 1 and 2 only**

Q4

If we want to store a string "abc" in an array str then the size of this array must be at least,

- (a) 2**
- (b) 3
- (c) 4
- (d) 5

Q5

No executable code will be generated if error is found during translation of the program using interpreter.

- (a) True**
- (b) False

Q6

Word processor is

- (a) Operating system
- (b) Application software**
- (c) Device driver
- (d) Utility software

Q7

Which of the following is the correct syntax to print multiple values or variables in

a single command using cout?

- (a) `cout << "Hello" + x + "\n";`
- (b) `cout << "H" << x << "\n";`**
- (c) `cout << "H", x, "\n";`
- (d) `cout << ("H" & x & "\n");`

Q8

Which of the following is correct way to initialize a variable x of int type with value 10?

- (a) `int x ; x = 10 ;`
- (b) `int x = 10 ;`**
- (c) `int x, x = 10;`
- (d) `x = 10 ;`

Q9

If there is more than one statement in the block of a for loop, which of the following must be placed at the beginning and the ending of the loop block?

- (a) parentheses ()
- (b) braces { }**
- (c) brackets []
- (d) arrows < >

Q10

Name of an array is a constant pointer.

- (a) True**
- (b) False

Q11

How many bytes will the pointer *intPtr* of type *int* move in the following statement?

`intPtr += 3 ;`

- (a) 3 bytes
- (b) 6 bytes
- (c) 12 bytes
- (d) 24 bytes

Q12

What will be the value of 'a' and 'b' after executing the following statements?

`a = 3;`
`b = a++;`

- (a) 3, 4**
- (b) 4, 4

- (c) 3, 3
- (d) 4, 3

Q13

Loader loads the executable code from hard disk to main memory.

- (a) True**
- (b) False

Q14

Which of the following is used with bit manipulation?

- (a) Signed integer
- (b) Un-signed integer
- (c) Signed double**
- (d) Un-signed double

Q15

Which of the following values C++ use to represent true and false?

- (a) 1 and 0**
- (b) 1 and -1
- (c) 11 and 00
- (d) Any numerical value

Q16

The argument of the isdigit() function is _____

- (a) a character,
- (b) a C-string,
- (c) a C++ string class variable
- (d) None of the given options.

Q17

Which data type should be used to store the value 50.7 ?

Float

Q18

Why should goto statement be avoided in C/C++?

When structured programming was started, it was urged not to use the *goto* statement. Though *goto* is there in C language but we will not use it in our programs. It will adopt the structured approach. All of our programs will consist of sequences, decisions and loop. Because loop provide best platform to manipulate the data.

Q19

What operator do you use to assign a pointer the address of another variable or constant? Marks: 2

& sige

i.e.

```
int i;  
int * ptri;  
ptri = &i;
```

Q20

If there are 2^n elements in an array then what would be the number of iterations required to search a number using binary search and linear search? Marks: 3

Q21

Convert the following switch statement into if statements. Marks: 5

```
switch (operator) {  
case '+':  
    result = op1 + op2;  
    break;  
case '-':  
    result = op1 - op2;  
    break;  
case 'x':  
case '*':  
    result = op1 * op2;  
    break;  
case '/':  
    result = operand1 / operand2;  
    break;  
default:  
    cout << "Unknown operator" ;  
}
```

```
if(operator==' +')  
    {  
        result = op1 + op2;  
    }  
else  
if(operator==' -')  
    {  
        result = op1 - op2;  
    }  
else  
if (operator==' *')  
    {
```

```
        result = op1 * op2;
    }

else
if (operator=='/')
    {
        result = op1 / op2;
    }

else
{
cout << "Unknown operator" ;
}
}
```

Q22

Write a recursive function that takes character array and starting subscript as arguments. In each recursive call, the function should display the string from subscript to the end of string. The starting subscript in first call should be 0. In each successive call, the subscript should increase by one and function should print the array from subscript to the end of string. The function should stop processing and return when null character encounters.

Suppose the char string passed to the function is, "SampleString", then the function will print output as follows,

```
SampleString
ampleString
mpleString
pleString
so on....
```

Marks: 10

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Spring 2009

CS201- Introduction to Programming

Question No: 1 (Marks: 1) - Please choose one

A precise sequence of steps to solve a problem is called

- ▶ Statement
- ▶ **Program**
- ▶ Utility
- ▶ Routine

Question No: 2 (Marks: 1) - Please choose one

The Compiler of C language is written in

- ▶ Java Language
- ▶ UNIX
- ▶ FORTRON Language
- ▶ **C Language**

Question No: 3 (Marks: 1) - Please choose one

Initialization of variable at the time of definition is,

- ▶ Must
- ▶ Necessary
- ▶ **Good Programming**
- ▶ None of the given options

Question No: 4 (Marks: 1) - Please choose one

In if structure the block of statements is executed only,

- ▶ When the condition is false
- ▶ When it contain arithmetic operators
- ▶ When it contain logical operators
- ▶ **When the condition is true**

Question No: 5 (Marks: 1) - Please choose one

Which of the following function(s) is/are included in **stdlib.h** header file?

- ▶ double atof(const char *nptr)
- ▶ int atoi(const char *nptr)
- ▶ char *strcpy (char *s1, const char *s2)
- ▶ **1 and 2 only**

Question No: 6 (Marks: 1) - Please choose one

Dealing with structures and functions passing by reference is the most economical method

- ▶ **True**
- ▶ False

Question No: 7 (Marks: 1) - Please choose one

Pointer is a variable which store,

- ▶ Data
- ▶ **Memory Address**
- ▶ Data Type
- ▶ Values

Question No: 8 (Marks: 1) - Please choose one

Preprocessor program perform its function before _____ phase takes place.

- ▶ Editing
- ▶ Linking
- ▶ **Compiling**
- ▶ Loading

Question No: 9 (Marks: 1) - Please choose one

Which of the following can not be a variable name?

- ▶ area
- ▶ _area
- ▶ **10area**
- ▶ area2

Question No: 10 (Marks: 1) - Please choose one

Which looping process is best, when the number of iterations is known?

- ▶ for
- ▶ while
- ▶ do-while
- ▶ **all looping processes require that the iterations be known**

Question No: 11 (Marks: 1) - Please choose one

Which character is inserted at the end of string to indicate the end of string?

- ▶ new line
- ▶ tab
- ▶ **null**
- ▶ carriage return

Question No: 12 (Marks: 1) - Please choose one

How many bytes are occupied by declaring following array of characters?

```
char str[] = "programming";
```

- ▶ 10
- ▶ 11
- ▶ 12
- ▶ 13

Question No: 13 (Marks: 1) - Please choose one

Which of the following header file defines the **rand()** function?

- ▶ iostream.h
- ▶ conio.h
- ▶ **stdlib.h**
- ▶ stdio.h

Question No: 14 (Marks: 1) - Please choose one

Commenting the code _____

- ▶ Makes a program easy to understand for others.
- ▶ Make programs heavy, i.e. more space is needed for executable.
- ▶ Makes it difficult to compile
- ▶ All of the given options.

Question No: 15 (Marks: 1) - Please choose one

What's wrong with this for loop?

for (int k = 2, k <=12, k++)

- ▶ the increment should always be ++k
- ▶ the variable must always be the letter i when using a for loop
- ▶ there should be a semicolon at the end of the statement
- ▶ **the commas should be semicolons**

Question No: 16 (Marks: 1) - Please choose one

For which array, the size of the array should be one more than the number of elements in an array?

- ▶ int
- ▶ **double**
- ▶ float
- ▶ char

Question No: 17 (Marks: 1)

To Which category of the software “Compiler and Interpreter” belongs?

Question No: 18 (Marks: 1)

What is the result of the expression $x = 2 + 3 * 4 - 4 / 2$

Question No: 19 (Marks: 2)

Write a declaration statement for an array of 10 elements of type float. Include an initialization statement of the first four elements to 1.0, 2.0, 3.0 and 4.0.

Question No: 20 (Marks: 3)

Write down the output of the following code?

```
int array[7], sum = 0;
for(int i=0;i<7;i++)
{
    array[i] = i;
    sum+= array[i];
}
cout<< " Sum = " <<sum;
```

ANS

Sum = 21

What will be the output of the following segment of C++ code?

```
int A[5] = { 1 , 2, 3, 4};
int i;
for (i=0; i<5; i++)
{
    A[i] = 2*A[i];
    cout << A[i] << " ";
}
}
```

ANS

2 4 6 8 0

Question No: 22 (Marks: 10)

Write a C++ program that will determine if a departmental store customer has exceeded the credit limit on a charge account.

Program should input the following facts in five variables

1. Account number
2. Balance at the beginning of month (Beginning balance)
3. total of all items charged by customer this month (charges)
4. total of all credits (credits)
5. allowed credit limit

Calculate the new balance

New balance = Beginning balance + charges – credits

Determine if **new balance** exceeds the **allowed credit limit**. For those customers whose credit limit is exceeded. The program should display the message "Credit Limit exceeded."

Q1

In C/C++ the string constant is enclosed

- (a) In curly braces
- (b) In small braces
- (c) In single quotes**
- (d) In double quotes

Q2

In flow chart, the symbol used for decision making is,

- a) Rectangle
- b) Circle
- c) Arrow
- d) Diamond**

Q3

The data type before a function name represents its,

(a) Return Type

- (b) Function data
- (c) Function arguments
- (d) Function name

Q4

The operator used to take the address of a variable is,

- (a) &&
- (b) ++
- (c) -
- (d) &**

Q5

The header file which is used for input and output is

- (a) maths.h
- (b) string.h
- (c) iostream.h**
- (d) ctype.h

Q6

When we are using command line argument(s), the default argument in C/C++ is/are _____ .

- a) argc
- b) argd
- c) argv
- d) argc and argv**

Q7

In C++, Integer calculation occurs in _____ bytes.

- a) 1 byte
- b) 2 bytes**
- c) 4 bytes
- d) 8 bytes

Q8

In the declaration of two dimensional array,

- (a) First index represents row and second represents column**
- (b) First index represents column and second represents row
- (c) Both indexes represent rows
- (d) Both indexes represent column

Q9

The address operator (&) can be used with,

- a) Statement
- b) Expression
- c) Variable**
- d) Constant

Q10

_____ translates high level language program into machine language code

- (a) Debugger

- (b) Editor
- (c) Compiler**
- (d) Linker

Q11

Which of the following data type(s) can operate on modulus operator '%'?

- a) float, int**
- b) float, double
- c) int
- d) char

Q12

What will be the result of the expression $z = x \% y$, if $x = 19$ and $y = 4$?

- a) 3**
- b) 4
- c) 15
- d) 19

Q13

Which character is inserted at the end of string to indicate the end of string?

- a) new line
- b) tab
- c) null**
- d) carriage return

Q14

What will be the value of i and j in the following code segment?

```
int i, j ;
int x[5] = {2, 3, 4, 8, 9} ;
int *ptr = &x[2];
i = (*ptr)++;
j = *ptr++ ;
```

- a) $i = 5, j = 5$**
- b) $i = 5, j = 8$
- c) $i = 4, j = 8$
- d) $i = 5, j = 9$

Q15

Syntax of union is identical to _____

- a) Structure**
- b) Class
- c) Function
- d) None of the given options

Q16

Let suppose

```
Union intorDouble{
    Int ival;
    Double charvar;
```

```
};  
  
main(){  
    intorDouble VAZ;  
    int size ;  
    size = sizeof(VAZ);  
}
```

What will be the value of variable "size", if int occupies 4 bytes and double occupies 8 bytes?

- a) 2
- b) 4
- c) 8
- d) 12

Q17

To Which category of the software "Compiler and Interpreter" belongs? (1)

System software

Q18

Give the general syntax of definition of structure. (1)

ANS

struct Name

```
{  
    // body of the structure  
};
```

Q19

Write the General syntax for the definition of a user defined function. (2)

ANS

return data type Function Name (**parameter list with data type**):

```
{  
    // definition body  
}
```

Q20

What will be the output of following code segment? (3)

```
int x[5] = {2, 4, 5, 7, 1};  
int *ptr = &x[2];  
cout << (*ptr)++ << " " ;  
cout << *ptr++ ;
```

ANS

5 6

Q21

Detect and correct compile time error(s) in the following code.

Hints: The following code pass a value to a function by Reference and print the value before and after pass. (5)

ANS

```
int test (int &x)
{
*x = *x + 200;
return x;
}

main()
{
int x = 100;

cout <<" x = " <<x;

test (*x); // //invalid type of argument uninary

cout<<endl<< " x = " <<x;

getch();
return 0;
}
```

ANS

The following function pass a reference to the function but in the main body the call mechanism is wrong. The * sign is not used with it . X = 100 after the function completion x = 300;

Q22

Write a C/C++ program which calculates the aggregate of a student.
The aggregate can be calculated by the formula: (10)

$$\text{Aggregate} = (\text{Matrix_marks} * 2 + \text{Fsc_marks} * 4) / 24$$

If the aggregate of a student is less than 150 then the program should display message

“You can not be admitted to VU” otherwise display the message

“Congratulation! You admitted in VU “

ANS

```
#include<iostream.h>
#include<conio.h>
```

```
main()
{
    int m,f;
    float a;
    m=254;
    f=340;
    a = ((m*2) + (f*4))/24;
    if(a < 150)
    {
        cout <<"You can not be admitted to VU";
    }
    else
    {
        cout <<"Congratulation! You admitted in VU ";
    }
    //Aggregate = (Matrix_marks*2 + Fsc_marks*4) / 24
    getch();
}
```

Q1

What is function of **cout** ?

- (a) To send data to printer
- (b) To read data from keyboard
- (c) To display message
- (d) To display output on the screen**

Q2

In Flow chart process is represented by

- (a) Rectangle**
- (b) Arrow symbol
- (c) Oval
- (d) Circle

Q3

&& is ----- operator.

- (a) An arithmetic
- (b) Logical**
- (c) Relational
- (d) Unary

Q4

An over Flow condition occurs when we try to assign a value to a variable which is,

- (a) Less than its maximum size
- (b) Greater than its maximum size
- (c) With in its range
- (d) Equal to its size

Q5

For dereferencing an array element using pointer, we use the operator

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

Q6

In the declaration of two dimensional array,

- (a) First index represents row and second represents column
- (b) First index represents column and second represents row
- (c) Both indexes represent rows
- (d) Both indexes represent column

Q7

Which of the following data type(s) can operate on modulus operator '%'?

- (a) float, int
- (b) float, double
- (c) int
- (d) char

Q8

Which of the following is the correct way to declare a variable x of integer type?

- (a) x int ;
- (b) integer x ;
- (c) int x;
- (d) x integer

Q9

Which of the following can not be a variable name?

- (a) area
- (b) _area
- (c) 10area
- (d) area2

Q10

Which of the function call is **call by value** for the following function prototype?

float area (int);

- (a) area(&num) ;
- (b) area(num) ;
- (c) area(int num) ;
- (d) area(*num) ;

Q11

Recursive functions are used when there is a repetitive pattern.

- (a) True

(b) False

Q12

What will be the range of numbers generated by function `rand () % 9`?

(a) 0 to 9

(b) 1 to 9

(c) 0 to 8

(d) 1 to 8

Q13

What will be the correct syntax to declare two-dimensional array of float data type?

(a) `float arr{2}{2} ;`

(b) `float arr[2][2] ;`

(c) `float arr[2,2] ;`

(d) `float[2][2] arr ;`

Q14

When a function finishes its execution then,

(a) The control return to its Prototype

(b) The control returns to its definition

(c) Control returns to statement following function call

(d) The compiler stop execution of whole program

Q15

Consider the following statements to initialize a two-dimensional array.

i. `int arr[2][3] = {4, 8, 9, 2, 1, 6} ;`

ii. `int arr[3][2] = {4, 8, 9, 2, 1, 6} ;`

iii. `int arr[][2] = {{4,8},{9, 2},{1, 6}} ;`

Which of the following option(s) are correct to initialize a two-dimensional array with 3 rows and 2 columns?

(a) (ii) only

(b) (iii) only

(c) (ii) and (iii)

(d) (i) and (iii)

Q16

Editors are used to compile the code.

(a) True

(b) False

Q17

What are global variables? (1)

ANS

Global variables are those that are defined outside of main. It can be accessed in entire program.

Q18

Is it possible to evaluate the size of structure, if yes then how? (1)

ANS

YES

`#include <iostream.h>`

```

#include <stdlib.h>
struct VehicleParts
{
int wheels;
int seats;
VehicleParts()
{
cout << "\n VehicleParts - default constructor";
}
VehicleParts(int wheels, int seats)
{
this->wheels = wheels; this->seats = seats; cout << "\n VehicleParts -
parameterized constructor";
}
}

```

Q19

Write down the general syntax of switch statement. (22)

ANS

switch (*variable/expression*)

```

{
case constant1 : statementList1 ;
case constant2: statementList1 ;
default: statementList1 ;
}

```

Q20

What will be the output of following code segment? (3)

```

int x[5] = {2, 4, 5, 7, 1} ;
int *ptr = &x[2];
cout << (*ptr)++ << " " ;
cout << *ptr++ ;

```

ANS

5 6

Q22

What is the difference between compiler and interpreter? (5)

ANS

compiler and interpreter are system software but the difference is that the compiler compile the whole program but the interpreter is compiled line by line. Compiler are efficient in performance.

Q23

(10)

Write a recursive function that takes three arguments (an integer array, starting subscript 's' and ending subscript 'e').

In first recursive call, the function should display the array from subscript 's' (s = 0) to 'e' (e = size of array). In each successive call, the function should print the array from index s+1 to e. The function should stop processing and return when starting subscript becomes equal to ending subscript.

For example, if user enters values for array 2, 3, 4, 5, 6 then the recursive function must

display the following output.

```
2 3 4 5 6
3 4 5 6
4 5 6
5 6
6
```

ANS

```
#include<iostream.h>
#include<conio.h>
void recursive(int [],int,int);
void main()
{
    int array[5];
    for(int i=0;i<5;i++)
    {
        cout<<"\nEnter the "<<i<<" Index number :";
        cin>>array[i];
    }
    recursive(array,0,4); //0 is the starting index and 4 is the ending subscript
    getch();
}
void recursive(int arr[],int s,int e)
{
    if(s!=e+1)
    {
        for(int i=s;i<=e;i++)
            cout<<arr[i]<<"t";

        cout<<endl;
        s++;
        recursive(arr,s,e); //Recursive call
    }
}
```

Q1

What is function of **cout** ?

- (a) To send data to printer
- (b) To read data from keyboard
- (c) To display message
- (d) To display output on the screen**

Q2

< , <= , > , >= are called ----- operators.

- (a) Logical
- (b) Arithmetic
- (c) Relational**
- (d) Conational

Q3

In while loop the loop counter must be initialized,

- (a) With in the loop
- (b) Before entering the loop**
- (c) At the end of the loop
- (d) None of the given options

Q4

Data Size of the file is always _____ the actual size of the file.

- (a) Greater than**
- (b) Equal to
- (c) Less than or equal to
- (d) None of the above

Q5

The precedence of * is higher than dot operator (.)operator

- (a) True**
- (b) False

Q6

Let ptr1 and ptr2 are pointer variables that points to integer data type then which one of the following arithmetic is allowed,

- (a) $ptr1 + ptr2$
- (b) $ptr1 - ptr2$
- (c) $ptr1 * ptr2$**
- (d) $ptr1 / ptr2$

Q7

Word processor is

- (a) Operating system
- (b) Application software**
- (c) Device driver
- (d) Utility software

Q8

What will be the range of numbers generated by function $rand() \% 9$?

- (a) 0 to 9
- (b) 1 to 9
- (c) 0 to 8**
- (d) 1 to 8

Q9

How many bytes will the pointer *intPtr* of type **int** move in the following statement?

intPtr += 3 ;

- (a) 3 bytes
- (b) 6 bytes
- (c) 12 bytes

(d) 24 bytes

Q10

What will be the correct syntax to assign an array named **arr** of 5 elements to a pointer **ptr**?

- (a) `*ptr = arr ;`
- (b) `ptr = arr ;`
- (c) `*ptr = arr[5] ;`**
- (d) `ptr = arr[5] ;`

Q11

What will be the output of the following code segment?

```
char *x = "programming" ;  
cout << *(x+2) << *(x+3) << *(x+5) << *(x+8) ;
```

- (a) prgm
- (b) rorm
- (c) ogai**
- (d) ramg

Q12

There is a pointer variable named **ptr** of type `int` then address of which type of variable the **ptr** will store in it?

- (a) variable of type `char`
- (b) variable of type `short`
- (c) variable of type `int`**
- (d) variable of type `double`

Q13

Flow charts explain the working of a program in pictorial format.

- (a) True**
- (b) False

Q14

The object _____ may be used both for file input and file output

- (a) `fstream`,
- (b) `ifstream`,**
- (c) `ofstream`,
- (d) none of the given options.

Q15

Most efficient method of dealing with structure variables is to define the structure globally

- (a) True**
- (b) False

Q16

If a variable is passed by value to a function and the function makes some changes to that variable then it

- (a) does not affect the original variable**
- (b) affects the original variable
- (c) causes syntax error
- (d) None of the given options

Q17

How does elements of two-dimensional array store into memory? (1)

ANS

Two dimensional arrays are also stored in liner order. As like one dimensional array.

Q18

What is a structure? (1)

ANS

In structure, we introduce a new data type. "A structure is a collection of variables under a single name. These variables can different types, and each has a name that is used to select it from the structure"

Q19 (2)

When a pointer is incremented then how many bytes will it move to change its address?

ANS

If an integer occupies four bytes in the memory, then the `yptr++;` will increment its value by four.

Q20

What happens when we increment a pointer? (3)

ANS

become 11. The increment of a pointer depends on its data type. The data type, the pointer points to, determines the amount of increment. In this case, `yptr` is an integer pointer. Therefore, when we increment the `yptr`, it points to the next integer in the memory. If an integer occupies four bytes in the memory, then the `yptr++;` will increment its value by four. This can be understood from the following example.

Q21

What are the advantages of random access file over sequential access file? (5)

Q22

Write a C/C++ program which calculates the aggregate of a student. The aggregate can be calculated by the formula: (10)

$$\text{Aggregate} = (\text{Matrix_marks} * 2 + \text{Fsc_marks} * 4) / 24$$

If the aggregate of a student is less than 150 then the program should display message

"You can not be admitted to VU" otherwise display the message
"Congratulation! You admitted in VU"

ANS

```
#include<iostream.h>
#include<conio.h>

main()
{
    int m,f;
    float a;
    m=254;
    f=340;
    a = ((m*2) + (f*4))/24;
    if(a < 150)
    {
        cout <<"You can not be admitted to VU";
    }
    else
    {
        cout <<"Congratulation! You admitted in VU ";
    }
    //Aggregate = (Matrix_marks*2 + Fsc_marks*4) / 24

    getch();
}
```

Q1

In C/C++ language the header file which is used to perform useful task and manipulation of character data is

- (a) cplex.h
- (b) ctype.h**
- (c) stdio.h
- (d) delay.h

Q2

The header file which is used for input and output is

- (a) maths.h
- (b) string.h
- (c) iostream.h**

(d) ctype.h

Q3

Suppose `int multi[5][10]`; when we are using `**multi`, it means,

(a) Single dereferencing

(b) Single referencing

(c) Double referencing

(d) Double dereferencing

Q4

To access the data members of structure _____ is used.

(a) dot operator (.)

(b) * operator

(c) → operator

(d) None of given.

Q5

The precedence of * is higher than dot operator (.)operator

(a) True

(b) False

Q6

Which of the following is the starting index of an array in C++?

(a) 0

(b) 1

(c) -1

(d) any number

Q7

When a call to function statement is encountered,

(a) The control transfers to its Prototype

(b) The control transfers to its definition

(c) Control returns to statement following function call

(d) The compiler stops execution of whole program

Q8

A function must always return value.

(a) True

(b) False

Q9

If an array has 100 elements, what is allowable range of subscripts?

(a) 0 – 99

(b) 1 – 99

(c) 0 – 100

(d) 1 – 100

Q10

If a pointer appears on left hand side of an assignment operator then right side of that assignment operator must be,

(a) Variable name

(b) Address of variable

(c) Variable value

(d) Constant

Q11

Editors are used to compile the code.

- (a) True
- (b) False**

Q12

Which bitwise operator returns false if both bits are 1?

- (a) AND
- (b) XOR
- (c) NOT
- (d) OR**

Q13

What does !(7) evaluate to in decimal where ! is a NOT operator?

- (a) 7**
- (b) 8
- (c) 9
- (d) 10

Q14

Structures cannot be passed as Function Parameters

- (a) True
- (b) False**

Q15

When break statement is encountered in a loop body it,

- (a) Transfers the control outside from current loop**
- (b) Transfers the control outside from current program
- (c) Enforces the next iteration of loop
- (d) Generates compile time error.

Q16

A union is a user-defined data type that contains only _____ from its list of members at a time.

- (a) One object
- (b) Two objects**
- (c) Three objects
- (d) None of the given options

Q17

Why programming is important? Describe in ONE line. (1)

“A program is a precise sequence of steps to solve a particular problem.”

Q18

Which bitwise operator returns true if both bits are different and returns false if both bits are same? (1)

ANS

1. !=
2. ==

Q19

Why we close a file after use? (2)

ANS

To save our data stored on file. Also this process makes our program fast and reliable.

Q20

Can you use an assignment operator to assign the value of one C-string to another? (3)

ANS

Yes we can assign value c-string to another i.e

```
char a={'I Love Pakistan'};
```

```
char b={'I Love Pakistan'};
```

Q21

The statement `int Name [2][2];` define a 2x2 array, Write the code which read data from keyboard for this array. (5)

ANS

```
for(int i=0; i<2; i++)
{
    for (w=0; w<2; w++)
    {
        cin >>Name[i][w];
    }
    cout <<endl;
}
for(int i=0; i<2; i++)
{
    for (w=0; w<2; w++)
    {
        cout<<Name[i][w]<<" ";
    }
    cout <<endl;
}
```

Q22

Write a program which reads a text file "**PlayersInfo.txt**" residing in the current directory. Open the file **PlayersInfo.txt** in read mode and assign these values to the struct **Player**; assume order of the data in the file to be exactly the same as the order of struct attributes. The struct **Player** has following attributes

- i) Name
- ii) Height

- iii) Age
- iv) Score
- v) Game

After reading the file and assigning values to the struct, in the end close the file **PlayersInfo.txt.** (10)

Q1

The size of int data type is

- (a) 1 bytes
- (b) 2 bytes**
- (c) 3 bytes
- (d) 4 bytes

Q2

When the logical operator AND (&&) combine two expressions exp1 and exp2 then the result will be true only,

- (a) When both exp1 and exp2 are true**
- (b) When both exp1 and exp2 are false
- (c) When exp1 is true and exp2 is false
- (d) When exp1 is false and exp2 is true

Q3

The correct syntax of do-while loop is,

- (a) (condition) while; do { statements; };
- (b) { statements; } do-while ();
- (c) while(condition); do { statements; };
- (d) do { statements; } while (condition);**

Q4

_____ provide communication channels between files and program.

- (a) Streams
- (b) Language like C++
- (c) Function seekg()**
- (d) None of the above

Q5

All elements of an array must be of,

- (a) different data type
- (b) float data only
- (c) character data only
- (d) same data type**

Q6

Function seekg() takes _____ parameter(s).

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

Q7

Structures help to define program-specific _____ .

- (a) functions**

- (b) datatypes
- (c) Arithmetic operations
- (d) None of the given options.

Q8

In the declaration of two dimensional array,

- (a) First index represents row and second represents column**
- (b) First index represents column and second represents row
- (c) Both indexes represent rows
- (d) Both indexes represent column

Q9

What will be the result of arithmetic expression $6+27/3*3$?

- (a) 33**
- (b) 45
- (c) 9
- (d) 30

Q10

Which of the function call is **call by value** for the following function prototype?

float area (int);

- (a) `area(&num) ;`
- (b) `area(num) ;`**
- (c) `area(int num) ;`
- (d) `area(*num) ;`

Q11

How many bytes are occupied by declaring following array of characters?

char str[] = "programming";

- (a) 10
- (b) 11
- (c) 12
- (d) 13

Q12

What will be the correct syntax to assign an array named **arr** of 5 elements to a pointer **ptr**?

- (a) `*ptr = arr ;`
- (b) `ptr = arr ;`
- (c) `*ptr = arr[5] ;`**
- (d) `ptr = arr[5] ;`

Q13

Let ptr1 and ptr2 are pointer variables then which of the following arithmetic operation is allowed on pointers?

- (a) Addition
- (b) Subtraction
- (c) Multiplication
- (d) All of the above**

Q14

The variables having a name, type and size are just like empty boxes.

(a) True

(b) False

Q15

When break statement is encountered in a loop body it,

(a) Transfers the control outside from current loop

(b) Transfers the control outside from current program

(c) Enforces the next iteration of loop

(d) Generates compile time error.

Q16

If two programs **a** and **b** are trying to open a file **xyz.txt** at approximately same time then

(a) Both programs will generate error

(b) One of them will succeed in opening that file and other will fail

(c) Both programs will open the file

(d) One of the program will re-start

Q17

What is meant by array manipulation? (1)

Q18

What will be the value of x after the execution of the following code segment? (1)

```
int x =10;
int y =30;
int *xptr = &x;
x = *xptr + 10;
```

Q19 (2)

What is the output of the code given below?

```
void main()
{
    int a=10,b=20;
    char x=1,y=0;
    if(a,b,x,y)
    {
        cout << "EXAM";
    }
}
```

Q20

What is Overflow condition? (3)

ANS

When we try to store larger information in a variable, than a data type can store, overflow condition occurs.

Q21

Write code which read a string not greater than 20 characters from keyboard stored it in an array Name and display it on the screen. (5)

ANS

```
char string[19];
cout<<"Enter a string";
cin >> string;
```

Q22 (10)

Write a C++ program which contains a user-define function named **convertHeight** which takes height of person in centimeter as an argument. This function converts the height in centimeter into feet and inches and displays them on the screen.

Program should prompt the user to enter height in centimeter and pass it to function **convertHeight** as an argument which displays height in feet and inches.

Hint:

1 foot = 12 inches

1 inch = 2.5 cm

ANS

```
#include<iostream.h>
```

```
#include<conio.h>
```

```
void convertHeight (int);
```

```
main()
```

```
{
```

```
    int high;
```

```
    cout <<"Enter the High of the Person = ";
```

```
    cin >> high;
```

```
    convertHeight(high);
```

```
    getch();
```

```
}
```

```
void convertHeight (int f)
```

```
{
```

```
    //1 foot = 12 inches
```

```
    //1 inch = 2.5 cm
```

```
    int i,c;
```

```
    i = f*12;
```

```
    c = i*2.5;
```

```
    cout <<"high in Feet = "<<f<<endl;
```

```
    cout <<"high in inches = "<<i<<endl;
```

```
    cout <<"high in CM = "<<c<<endl;
```

```
}
```

Q1

The data type of size one byte is

- (a) char
- (b) int
- (c) long
- (d) double

Q2

If Num is an integer variable then $\text{Num} *= 4;$ means,

- (a) Multiply Num 4 times
- (b) Multiply 4 with Num and display
- (c) Multiply 4 with Num and assign the result to Num**
- (d) Add 4 with Num

Q3

Member function tellg() returns the current location of the _____ pointer.

- (a) tellptr()**
- (b) write()
- (c) seekg()
- (d) get()

Q4

If we want to store a string "abc" in an array str then the size of this array must be at least,

- (a) 2**
- (b) 3
- (c) 4
- (d) 5

Q5

Pointer is a variable which store,

- (a) Values
- (b) Data
- (c) Memory Address**
- (d) Data Type

Q6

C is widely known as development language of _____ operating system.

- (a) Linux
- (b) Windows**
- (c) Unix
- (d) Mac OS

Q7

C++ is a case-sensitive language

- (a) True**
- (b) False

Q8 What is the output of the following code?

```
for (int a = 1; a <= 1; a++) cout << a++; cout << a;
```

- (a) 22
- (b) 12**
- (c) 23
- (d) 13

Q9

A continue statement causes execution to skip to

- (a) the return 0; statement
- (b) the first statement after the loop
- (c) the statements following the continue statement
- (d) the next iteration of the loop**

Q10

If there is more than one statement in the block of a for loop, which of the following must be placed at the beginning and the ending of the loop block?

- (a) parentheses ()
- (b) braces { }**
- (c) brackets []
- (d) arrows < >

Q11

What will be the correct syntax for the following function call?

float square (int &);

- (a) square (int num);
- (b) square (&num);**
- (c) square (num);
- (d) square (*num);

Q12

Which of the following is the correct way to assign an integer value 5 to element of a matrix say 'm' at second row and third column?

- (a) m[2][3] = 5 ;**
- (b) m[3][2] = 5 ;
- (c) m[1][2] = 5 ;
- (d) m[2][3] = '5';

Q13

How many dimensions does n-dimensional array has?

- (a) n dimensions**
- (b) 2n dimensions
- (c) (n+1) dimensions
- (d) (n-1) dimensions

Q14

Consider the following code segment. What will be the output of following code?

```
int addValue (int *a){  
int b = (*a) + 2;  
return b ;
```



```

}
main () {
int x =6 ;
cout << x << “,” ;
cout << addValue(&x) << “,” ;
cout << x ;
}

```

(a) 6,8,6

(b) 6,6,8

(c) 6,8,8

(d) 6,6,6

Q15

If most significant bit of un-signed number is 1 then it represents a positive number.

(a) True

(b) False

Q16

When we declare a multidimensional array the compiler store the elements of multidimensional array in the form of,

(a) Contiguous memory location

(b) Matrix

(c) Columns

(d) Rows

Q17

What is the functionality of the function: **char *strncat (char *s1, const char *s2, size_t n)** (1)

ANS

char *strncat(char *s1, const char *s2, size_t n)	Appends at most n characters of string s2 to array s1 . The first character of s2 overwrites the terminating null character of s1 . The value of s1 is returned.
--	--

Q18

Write a piece of code that outputs three values of type int, long and float to a stream. (1)

ANS

```

main()
{
int a;
long b;
float c;
a = 10;
b= 124568979;
c = 6.57;
cout <<a<<"\t"<<b<<"\t"<<c;

```

getche());

}

Q19

Which bit of the number is used as a sign bit? (2)

ANS

The most significant bit is used as a sign bit.

Q20

What is difference between single-dimensional and multi-dimensional array?

ANS

Single dimensional array used to stored lists and multi dimensional arrays used to stored value as table format i.e matrix.

Q21

Write down the C++ program that calculates the Zakat on the amount entered by the user

Note: Zakat is 2.5% of the given amount (5)

ANS

```
main()
{
    int amount;
    float zakat;
    cout <<"Enter the Amount = ";
    cin >>amount;
    zakat = (amount*2.5)/100;
    cout <<"Amount = "<<amount<<endl;
    cout <<"Amount = "<<zakat<<endl;
    getch();
}
```

Q22

What is meant by scope of identifiers? Differentiate between different scope of identifiers and explain them with examples? (10)

Scope of Identifiers

An 'Identifier' means any name that the user creates in his/her program. These names can be of variables, functions and labels. Here the scope of an identifier means its visibility. We will focus Scope of Variables in our discussion.

Now this variable 'i' can be used in any statement inside the function func1(). But consider this variable being used in a different function like:

```
void func2()
{
```

```
int k = i + 4; //Compilation error  
}
```

The variable 'i' belongs to func1() and is not visible outside that. In other words, 'i' is local to func1().

Q1

What is function of **cout** ?

- (a) To send data to printer
- (b) To read data from keyboard
- (c) To display message
- (d) To display output on the screen**

Q2

For one byte there are _____ combinations of values that can be stored in computer.

- (A) 2^6
- (B) 2^7
- (C) 2^8
- (D) 2^4

Q3

_____ provide communication channels between files and program.

- (a) Streams
- (b) Language like C++
- (c) Function seekg()**
- (d) None of the above

Q4

The data type before a function name represents its,

- (a) Return Type**
- (b) Function data
- (c) Function arguments
- (d) Function name

Q5

In C/C++ language when an array is passed to a function then by default its passing mechanism is,

- (a) Call by value
- (b) Call by Reference**
- (c) It depends on type of array
- (d) It depends on the return type of function.

Q6

Array is a data structure which store

- (a) Memory addresses
- (b) Variables**
- (c) Data Type
- (d) Data

Q7

If there is more than one statement in the block of a for loop, which of the following must be placed at the beginning and the ending of the loop block?

- (a) parentheses ()
- (b) braces { }**
- (c) brackets []
- (d) arrows < >

Q8

Array is passed by value to a function by default.

- (a) True
- (b) False**

Q9

Which of the following is the correct function call having array named *student* of 10 elements as a parameter.

- (a) addRecord(student[]);
- (b) addRecord(student);
- (c) addRecord(student[10]);**
- (d) addRecord(*student);

Q10

What will be the correct syntax for initialization of pointer *ptr* of type int with variable *x*?

- (a) int ptr = &x ;
- (b) int ptr = x ;
- (c) int *ptr = &x ;**
- (d) int ptr* = &x ;

Q11

What will be the correct syntax for initialization of pointer *ptr* with string "programming"?

- (a) char ptr = 'programming' ;
- (b) char *ptr = "programming" ;**
- (c) char *ptr = 'programming' ;
- (d) *ptr = "programming" ;

Q12

The condition in while loop may contain logical expression but not relational expression.

- (a) True**
- (b) False

Q13

We want to access array in random order which approach is better?

- (a) Pointers**
- (b) Array index
- (c) Both pointers and array index are better
- (d) None of the given options.

Q14

Single line comments explaining code would be preceded like in the following example.

- (a) /*
- (b) //**
- (c) /

(d) `/**`

Q15

Function `write()` takes _____ as parameter(s).

- (a) String of pointer type
- (b) String and no. of bytes to be written
- (c) Pointer array of characters and delimiter
- (d) String of variable lengths, no. of bytes to be read and flags**

Q16

Structure is a collection of _____ under a single name.

- (a) Only Functions**
- (b) Only Variables
- (c) Both Functions and Variables**
- (d) None of the given options

Q17

What will be the correct syntax to initialize a pointer 'ptr' with two-dimensional array 'm'? (1)

ANS

```
int m[2][2];
int * ptr;
ptr = *m;
```

Q18

Which one of the loop (while or do-while) must be used if it is necessary to execute a loop at least once? (1)

ANS

do-while loop

Q19

Identify each of the following function as string conversion function or string manipulation function. (2)

```
double atof(const char *nptr)
char *strcpy ( char *s1, const char *s2)
int atoi(const char *nptr)
```

ANS

1. **double atof(const char *nptr) ---**→ Converts the string nPtr to double.
2. **char *strcpy (char *s1, const char *s2) --**→ Copies string s2 into character array s1. The value of is returned.
3. **int atoi(const char *nptr)--**→ Converts the string nPtr to int.

Q20

What is difference between single-dimensional and multi-dimensional array? (3)

ANS

Single dimentional array used to stored lists and muli dimestional arrays used to stored value as tabler formate i.e matrix.

Q21

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

```
int num[10] = {2, 3, 5, 8, 9, 10, 12, 15, 19, 20} ;
int *ptr = num ;
for (int i=0; i<10; i+=2){
cout << *(ptr+i) << " , ";
}
}
```

ANS

2, 5, 9, 12, 19,

Q22

Write a C++ program which contains a user-define function named **convertHeight** which takes height of person in centimeter as an argument. This function converts the height in centimeter into feet and inches and displays them on the screen. (10)

Program should prompt the user to enter height in centimeter and pass it to function **convertHeight** as an argument which displays height in feet and inches.

Hint:

1 foot = 12 inches

1 inch = 2.5 cm

ANS

```
#include<iostream.h>
#include<conio.h>
```

```
void convertHeight (int);
```

```
main()
```

```
{
```

```
int hight;
```

```
cout <<"Enter the High of the Person = ";
```

```
cin >> hight;
```

```
convertHeight(hight);
```

```
getche();
```

```
}
```

```
void convertHeight (int f)
```

```
{
```

```
//1 foot = 12 inches
```

```
//1 inch = 2.5 cm
```

```
int i,c;
```

```
i = f*12;
```

```
c = i*2.5;
```

```
cout <<"high in Feet = "<<f<<endl;  
cout <<"high in inches = "<<i<<endl;  
cout <<"high in CM = "<<c<<endl;  
  
}
```

Q1

Compiler is a

- (a) **System software**
- (b) Application Software
- (c) Driver
- (d) Editor

Q2

In while loop the loop counter must be initialized,

- (a) With in the loop
- (b) **Before entering the loop**
- (c) At the end of the loop
- (d) None of the given options

Q3

If Num is an integer variable then Num*= 4; means,

- (a) Multiply Num 4 times
- (b) Multiply 4 with Num and display
- (c) **Multiply 4 with Num and assign the result to Num**
- (d) Add 4 with Num

Q4

In C/C++ ,the arguments are passed by _____ to a function by default .

- (a) reference
- (b) **value**
- (c) data
- (d) type

Q5

Disks is divided into _____ with power of _____.

- (a) Chunks, 2^n
- (b) Blocks, n^2
- (c) Blocks, 2^n
- (d) Chunks, n^2

Q6

C is widely known as development language of _____ operating system.

- (a) Linux
- (b) **Windows**
- (c) Unix
- (d) Mac OS

Q7

Assignment operator '=' is a

- (a) Unary operator

(b) Binary operator

- (c) Ternary operator
- (d) None of the given options

Q8

Consider the following code segment. What will be the output of the following program?

```
int func(int) ;  
int num = 10 ;  
  
int main(){  
int num ;  
num = 5 ;  
cout << num ;  
cout << func(num) ;  
}  
int func(int x){  
return num ;  
}
```

- (a) 5, 5**
- (b) 10, 5
- (c) 5, 10
- (d) 10, 10

Q9

Name of an array is a constant pointer.

- (a) True**
- (b) False

Q10

What will be the correct syntax to assign an array named *arr* of 5 elements to a pointer *ptr*?

- (a) *ptr = arr ;
- (b) ptr = arr ;
- (c) *ptr = arr[5] ;**
- (d) ptr = arr[5] ;

Q11

If there are $2^{(n+1)}$ elements in an array then what would be the number of iterations required to search a number using binary search algorithm?

- (a) n elements
- (b) (n+1) elements
- (c) $2(n+1)$ elements
- (d) $2^{(n+1)}$ elements

Q12

In C/C++, null character is represented as

- (a) \n**
- (b) \0

- (c) \t
- (d) \r

Q13

How many nested loop would be required to manipulate n-dimensional array?

- (a) 2n
- (b) n**
- (c) n + 1
- (d) n - 1

Q14

What will be the correct syntax to access the value of fourth element of an array using pointer ptr?

- (a) ptr[3]**
- (b) (ptr+3)
- (c) *(ptr+3)
- (d) Both 1 and 3

Q15

Single line comments explaining code would be preceded like in the following example.

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

Q16

If a variable is passed by value to a function and the function makes some changes to that variable then it

- (a) does not affect the original variable**
- (b) affects the original variable
- (c) causes syntax error
- (d) None of the given options

Q17

What is meant by *num and &num? [1]

ANS

* num is a pointer and &num is a reference to that pointer.

Q18

Suppose there is a pointer to structure *sPtr. How can we access the data member 'name' with sPtr? [1]

ANS

Structure data members using pointers Using the * operator;
(*sPtr).name

Q19

Why we close a file after use? [2]

ANS

To save our data stored on file. Also this process makes our program fast and reliable

Q20

Define Flow chart. [3]

ANS

Flow Chart

A flow chart is a pictorial representation of a program. There are labeled geometrical symbols, together with the arrows connecting one symbol with other. A flow chart helps in correctly designing the program by visually showing the sequence of instructions to be executed.

Q21

Write down the function definition if we want to pass the arguments to a function by reference without changing the values stored at that addresses. [5]

Q22

From writing to execution of the program following software are used explain for what purpose each is used. [10]

Editor
Compiler/Interpreter
Linker
Loader

ANS

Editors is a tool for writing the code of a program. For this purpose we used Editors in which we write our code. We can use word processor too for this, but word processors have many other features like bold the text, italic, coloring the text etc, so when we save a file written in a word processor, lot of other information including the text is saved on the disk. For programming purposes we don't need these things we only need simple text. Text editors are such editors which save only the text which we type. So for programming we will be using a text editor

Compiler and Interpreter

Compilers translate the English like language (Code written in C) into a language (Machine language) which computers can understand. The Compiler read the whole program and translates it into machine language completely. The difference between interpreter and compiler is that compiler will stop translating if it finds an error and there will be no executable code generated whereas Interpreter will execute all the lines before error and will stop at the line which contains the error. So Compiler needs syntactically correct program to produce an executable code. We will be using compiler in our course

As we write the code in English and we know that computers can understand only 0s and 1s. So we need a translator which translates the code of our program

into machine language. There are two kinds of translators which are known as Interpreter and Compilers. These translators translate our program which is written in C-Language into Machine language. Interpreters translates the program line by line meaning it reads one line of program and translates it, then it reads second line, translate it and so on. The benefit of it is that we get the errors as we go along and it is very easy to correct the errors. The drawback of the interpreter is that the program executes slowly as the interpreter translates the program line by line. Another drawback is that as interpreters are reading the program line by line so they cannot get the overall picture of the program hence cannot optimize the program making it efficient.

Linker Most of the time our program is using different routines and functions that are located in different files, hence it needs the executable code of those routines/functions. Linker is a tool which performs this job, it checks our program and includes all those routines or functions which we are using in our program to make a standalone executable code and this process is called Linking

Loader after a executable program is linked and saved on the disk and it is ready for execution. We need another process which loads the program into memory and then instruct the processor to start the execution of the program from the first instruction (the starting point of every C program is from the main function). This processor is known as loader. Linker and loaders are the part of development environment. These are part of system software.

Q1

There are mainly ----- types of software

- (a) Two
- (b) Three
- (c) Four
- (d) Five

Q2

< , <= , > , >= are called ----- operators.

- (a) Logical
- (b) Arithmetic
- (c) Relational
- (d) Conational

Q3

In order to get 256 from the number 2568 we divide this number by 10 and take,

- (a) Its remainder
- (b) The number
- (c) Its quotient
- (d) Its divisor

Q4

If `int x = 10;` then the value of `x/= 3;` will be,

- (a) 10
- (b) 3**
- (c) 13
- (d) 1

Q5

How many parameter(s) function `getline()` takes?

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

Q6

Suppose `int multi[5][10];` when we are using `**multi`, it means,

- (a) Single dereferencing
- (b) Single referencing
- (c) Double referencing**
- (d) Double dereferencing

Q7

To access the data members of structure _____ is used.

- (a) dot operator (.)**
- (b) * operator
- (c) → operator
- (d) None of given.

Q8

There is NO difference between **bitwise AND operator (&)** and **Logical AND (&&) operator.**

- (a) True**
- (b) False

Q9

Which of the following data type(s) can operate on modulus operator '%'?

- (a) float, int**
- (b) float, double
- (c) int
- (d) char

Q10

What's wrong with this while loop?

```
while( (i < 10) && (i > 24))
```

- (a) the logical operator `&&` cannot be used in a test condition
- (b) the while loop is an exit-condition loop
- (c) the while loop is an exit-condition loop**
- (d) the test condition is always true

Q11

The switch structure is a _____ construct

- (a) single-selection
- (b) bi-selection**

(c) multiple-selection

(d) unconditional

Q12

Keyword 'array' must be used to declare an array.

(a) True

(b) False

Q13

What will be the correct syntax to declare two-dimensional array of float data type?

(a) float arr{2}{2} ;

(b) float arr[2][2] ;

(c) float arr[2,2] ;

(d) float[2][2] arr ;

Q14

When an array element is passed to a function then this array element is passed to the function,

(a) By reference

(b) By data type

(c) By value

(d) By data

Q15

Which of the following operator is used to access the value of variable pointed to by a pointer?

(a) * operator

(b) -> operator

(c) && operator

(d) & operator

Q16

Paying attention to detail in designing a program is _____

(a) Time consuming

(b) Redundant

(c) Necessary

(d) Somewhat Good

Q17

How does elements of two-dimensional array store into memory? (1)

Two dimensional arrays are also stored in liner order. As like one dimensional array.

Q18

Which strategy is used by binary search algorithm to search a number? (1)

ANS

'divide and conquer' strategy is applied.

Q19

Write down the general syntax of switch statement. (2)

ANS

```

switch ( variable/expression )
{
case constant1 : statementList1 ;
case constant2: statementList1 ;
default: statementList1 ;
}

```

Q20

What is a Linker? (3)

Linker Most of the time our program is using different routines and functions that are located in different files, hence it needs the executable code of those routines/functions. Linker is a tool which performs this job, it checks our program and includes all those routines or functions which we are using in our program to make a standalone executable code and this process is called Linking

Q21

What are similarities and differences between Structures and Unions? (5)

Structure

In structures, the data members are public by default. It means that these are visible to all and anyone can change them. Is there any disadvantage of this? Think about the date.

syntax

```

struct student
{
char name[60];
char address[100];
float GPA;
};

```

Unions We have another construct named union. The concept of union in C/C++ is: if we have something in the memory, is there only one way to access that memory location or there are other ways to access it. We have been using int and char interchangeably in our programs. We have already developed a program that prints the ACSII codes. In this program, we have stored a char inside an integer. Is it possible to have a memory location and use it as int or char interchangeably? For such purposes, the construct union is used. The syntax of union is:

union intOrChar

```

{
int i;
char c;
};

```

Q22

Differentiate between C and c++. (10)

1. C was the C++ predecessor. As it's name implies, alot of C remains in

- C++. Although not actually being more powerful than C.
2. C++ allows the programmer to more easily manage and operate with Objects, using an OOP (Object Oriented Programming) concept
 3. C++ allows the programmer to create classes, which are somewhat similar to C structures. However, to a class can be assigned methods, functions associated to it, of various prototypes, which can access and operate within the class, somewhat like C functions often operate on a supplied handler pointer.
 4. Although it is possible to implement anything which C++ could implement in C, C++ aids to standardize a way in which objects are created and managed, whereas the C programmer who implements the same system has a lot of liberty on how to actually implement the internals, and style among programmers will vary a lot on the design choices made
 5. In C, some will prefer the handler-type, where a main function initializes a handler, and that handler can be supplied to other functions of the library as an object to operate on/through. Others will even want to have that handler link all the related function pointers within it which then must be called using a convention closer to C++.
 6. C++ applications are generally slower at runtime, and are much slower to compile than C programs. The low-level infrastructure for C++ binary execution is also larger. For these reasons C is always commonly used even if C++ has a lot of popularity, and will probably continue to be used in projects where size and speed are primary concerns, and portable code still required (assembly would be unsuitable then).

Q1

The remainder (%) operator is

- (a) A logical operator
- (b) An arithmetic operator**
- (c) A relational operator
- (d) A division operator

Q2

If `int sum = 10;` then the value of the statement `sum = sum + 3 ;` is ,

- (a) 7
- (b) Illegal statement
- (c) Garbage value
- (d) 13**

Q3

Which of the following function(s) is/are included in `ctype.h` header file?

- (a) `isdigit(int c)`
- (b) `isxdigit(int c)`
- (c) `tolower(int c)`
- (d) All of the above**

Q4

In C/C++ which of the following header file is used for string manipulation?

- (a) `stdlib.h`**
- (b) `string.h`

- (c) strings.h
- (d) stype.h

Q5

_____ provide communication channels between files and program.

- (a) Streams
- (b) Language like C++
- (c) Function seekg()**
- (d) None of the above

Q6

_____ translates high level language program into machine language code

- (a) Debugger
- (b) Editor
- (c) Compiler**
- (d) Linker

Q7

Which of the following data type(s) can operate on modulus operator '%'?

- (a) float, int**
- (b) float, double
- (c) int
- (d) char

Q8

C++ is a case-sensitive language

- (a) True**
- (b) False

Q9

To include code from the library in the program, such as iostream, a directive would be called up using this command.

- (a) #include "iostream.h"
- (b) include <iostream.h>
- (c) include <iostream.h>
- (d) #include <iostream.h>**

Q10

What will be the range of numbers generated by function rand () % 9?

- (a) 0 to 9
- (b) 1 to 9
- (c) 0 to 8**
- (d) 1 to 8

Q11

An array stores the numbers into consecutive memory locations.

- (a) True**
- (b) False

Q12

Which of the following is the correct statement for the following declaration?

const int *ptr.

- (a) ptr is a constant pointer
- (b) ptr is constant integer pointer**

- (c) ptr is a constant pointer to int
- (d) ptr is a constant pointer to int

Q13

Which of the following header file defines the **rand()** function?

- (a) iostream.h
- (b) conio.h
- (c) stdlib.h**
- (d) stdio.h

Q14

Consider the following code segment. What will be the output of following code?

```
int addValue (int *a){
int b = (*a) + 2;
return b ;
}
main () {
int x =6 ;
cout << x << “,” ;
cout << addValue(&x) << “,” ;
cout << x ;
}
```

- (a) 6,8,6**
- (b) 6,6,8
- (c) 6,8,8
- (d) 6,6,6

Q15

Identifier is a name that can be given to variables, labels and functions.

- (a) True**
- (b) False

Q16

For which array, the size of the array should be one more than the number of elements in an array?

- (a) Int
- (b) Char
- (c) Double
- (d) float**

Q17

Give a precise definition of **function** . (1)

ANS

Functions In C/C++, functions are a way of modularizing the code. A bigger problem is broken down into smaller and more manageable parts. There is no rule of thumb for the length of each part but normally one function's length is not more than one screen.

Q18

What will be the size of array if we initialize an array with declaration: **int arr[] = {0, 0, 0, 0};**? (1)

ANS

```
int arr[3];
```

Q19

What is the difference between **switch** statement and **if** statement. (2)

ANS

In switch statement only one variable can be tested on various condition but using if we can tested multi variables in single statement

Q20

Evaluate the following arithmetic expressions. (3)

a) $X = 2 + 6 * 4 - 4 * 20 / 5 + 3 * 2$

b) $Y = (6 * 7) - (2 + 3) * (3 - 1) + 5 * (3 + 1)$

ANS

a) $X = 2 + (6 * 4) - (4 * 20) / 5 + (3 * 2)$

b) $Y = ((6 * 7) - (2 + 3) * (3 - 1) + (5 * (3 + 1)))$

a) 16

b) 52

Q21

What is the difference between = in C as compared to = used in algebra. (5)

ANS

In C = sign is used to assigned the value in algebra = sign is show that the both side are equal.

In C there must be a variable on the = sign and the right side of the = sign must be a arithmetic expression, variable or a value.

In algebra both side of the equation may or may not be expression.

Q22

Write a program which consists of three variables Area, Per, Base, this program should find the area of triangle using the formula, (10)

$$\text{Area} = (\text{Base} * \text{Per})/2$$

```
#include<iostream.h>
#include<conio.h>
main()
{
    float Area, Per, Base;
    // Area = (Base * Per)/2
    Per = 5.0;
    Base = 2.5;
    Area = (Base * Per)/2;
    cout <<"Area = " <<Area;
    getch();
}
```

}

Q1

In C/C++ language the header file which is used to perform useful task and manipulation of character data is

- (e) cplex.h
- (f) ctype.h**
- (g) stdio.h
- (h) delay.h

Q2

The header file which is used for input and output is

- (e) maths.h
- (f) string.h
- (g) iostream.h**
- (h) ctype.h

Q3

Suppose **int multi[5][10]**; when we are using ****multi** , it means,

- (e) Single dereferencing
- (f) Single referencing
- (g) Double referencing**
- (h) Double dereferencing

Q4

To access the data members of structure _____ is used.

- (e) dot operator (.)**
- (f) * operator
- (g) → operator
- (h) None of given.

Q5

The precedence of * is higher than dot operator (.)operator

- (c) True**
- (d) False

Q6

Which of the following is the starting index of an array in C++?

- (e) 0**
- (f) 1
- (g) -1
- (h) any number

Q7

When a call to function statement is encountered,

- (e) The control transfers to its Prototype**
- (f) The control transfers to its definition
- (g) Control returns to statement following function call
- (h) The compiler stops execution of whole program

Q8

A function must always return value.

- (c) True
- (d) False**

Q9

If an array has 100 elements, what is allowable range of subscripts?

- (e) 0 – 99
- (f) 1 – 99
- (g) 0 – 100**
- (h) 1 – 100

Q10

If a pointer appears on left hand side of an assignment operator then right side of that assignment operator must be,

- (e) Variable name
- (f) Address of variable**
- (g) Variable value
- (h) Constant

Q11

Editors are used to compile the code.

- (c) True
- (d) False**

Q12

Which bitwise operator returns false if both bits are 1?

- (e) AND
- (f) XOR
- (g) NOT
- (h) OR**

Q13

What does !(7) evaluate to in decimal where ! is a NOT operator?

- (e) 7**
- (f) 8
- (g) 9
- (h) 10

Q14

Structures cannot be passed as Function Parameters

- (c) True
- (d) False**

Q15

When break statement is encountered in a loop body it,

- (e) Transfers the control outside from current loop**
- (f) Transfers the control outside from current program
- (g) Enforces the next iteration of loop
- (h) Generates compile time error.

Q16

A union is a user-defined data type that contains only _____ from its list of members at a time.

- (e) One object

(f) Two objects

(g) Three objects

(h) None of the given options

Q17

Why programming is important? Describe in ONE line. (1)

Q18

Which bitwise operator returns true if both bits are different and returns false if both bits are same? (1)

Q19

Why we close a file after use? (2)

Q20

Can you use an assignment operator to assign the value of one C-string to another? (3)

Q21

The statement `int Name [2][2];` define a 2x2 array, Write the code which read data from keyboard for this array. (5)

Q22

Write a program which reads a text file "**PlayersInfo.txt**" residing in the current directory. Open the file **PlayersInfo.txt** in read mode and assign these values to the struct **Player**; assume order of the data in the file to be exactly the same as the order of struct attributes. The struct **Player** has following attributes

- i) Name
- ii) Height
- iii) Age
- iv) Score
- v) Game

After reading the file and assigning values to the struct, in the end close the file **PlayersInfo.txt**. (10)

Q23

Q2

Write a program to convert upper case letter to lower case letter. (5)

Write a program to convert lower case letter to upper case letter. (5)

Q2

Write a program to convert upper case letter to lower case letter. (5)

Ans:

```
#include <iostream>

using std::cout;
using std::cin;
using std::endl;

#include <stdlib.h>

int main()
{
    char inputString[100];
    char lowerCase[100];
    cout<<"Please enter a string (maximum 100 characters): ";
    gets(inputString);
    int i=0;
    for(i=0; i<strlen(inputString); i++)
    {
        lowerCase[i] = tolower(inputString[i]);
    }
    lowerCase[i]='\0';
    puts(lowerCase);
    system("PAUSE");
    return 0;
}
```

Write a program to convert lower case letter to upper case letter. (5)

Ans:

```
#include <iostream>
```

```
using std::cout;
```

```
using std::cin;
```

```
using std::endl;
```

```
#include <stdlib.h>
```

```
int main()
```

```
{
```

```
    char inputString[100];
```

```
    char upperCase[100];
```

```
    cout<<"Please enter a string (maximum 100 characters): ";
```

```
    gets(inputString);
```

```
    int i=0;
```

```
    for(i=0; i<strlen(inputString); i++)
```

```
    {
```

```
        upperCase[i] = toupper(inputString[i]);
```

```
    }
```

```
    upperCase[i]='\0';
```

```
    puts(upperCase);
```

```
    system("PAUSE");
```

```
    return 0;
```

```
}
```