

APEEJAY SCHOOL, PITAM PURA
FIRST TERM EXAMINATION (2016-2017)
CLASS - XII
SUBJECT – Computer Science

Max. Marks: 70

Duration: 3 Hours

Instructions :

- All the questions are compulsory.
- Programming Language: C++ .
- Write down the serial number of the question before attempting it.

Q1.a) Write short notes on typedef and #define. (2)

b) Name the header file to which the following function belong : (2)

(i) itoa () (ii) floor()

c) Give the **output** of the following program (Assuming that all required header files (3)

are included in the program

```
void PACK(char *str)
{ char ch='A';
int L,M,N;
    for(L=0;L<str[L]!='\0';L++);
    for(M=0;M<=L;M++)
        if(str[M]=='-')
            { for(N=M;N<=L;N++)
                str[N]=str[N+1];
              M--; }
        else
            if(isdigit(str[M]))
                str[M]=ch++;
    }
```

```
void main( )
{ char STD[ ]="The-STD-code--is-0542";
PACK(STD);
cout<<STD<<endl;
getch();
}
```

d) Rewrite the following program after removing the syntactical errors (if any).

Underline each correction.

```
#include[iostream.h]
```

(3)

```

typedef char Text(80) ;
void main()
{Text T= "Indian";
  int Count=strlen(T) ;
  cout<<T<<'has'<<Count<<'characters' <<endl ;
}

```

e) Find the output of the following program: (4)

```

#include<iostream.h>
void main ( )
{ int Track [ ] = {10, 20, 30, 40}, *S ;
  S=Track ;
  Track [1] += 30 ;
  cout<<"Striker"<<*S<<endl ;
  S --=10;
  S++ ;
  cout<<"Next@"<<*S<<endl ;
  S+=2 ; cout<<"Last@"<<*S<<endl;
  cout<< "Reset To" <<Track[0] <<endl ;}

```

(f) In the following C++ program what is the expected value of Myscore from Options (i) to (iv) given below. Justify your answer. (2)

```

#include<stdlib.h>
#include<iostream.h>
void main( )
{
  randomize();
  int Score[] = {25,20,34,56, 72, 63}, Myscore;
  Myscore = Score[2 + random(2)];
  cout<<Myscore<<endl; }

```

- (i) 25
- (ii) 34
- (iii) 20
- (iv) None of the above

Q2 (a) Explain the difference between access specifiers private, public and protected. Explain the difference with example of each. (3)

b) class Science (2)

```

{
char Topic[20];
int Weightage;
public:
Science ( ) //Function 1
{
strcpy (Topic, "Optics" );
Weightage = 30;
}
}

```

```

cout<<"Topic Activated";
}
~Science() //Function 2
{
cout'<<"Topic Deactivated";
}
};

```

(i) Name the specific features of class shown by Function 1 and Function 2 in the above example.

(ii) How would Function 1 and Function 2 get executed?

c) class Regular

(4)

```

{
    char Collegecode[10];
    public:
        void InRegular();
        void OutRegular();
};
class Distance
{protected:
    char StudyCentreCode[5];
    public:
        void InDistance();
        void OutDistance();
};
class Course : public Regular, private Distance
{
    char Code[5];
    float fees;
    int duration;
    public:
        void InCourse();
        void OutCourse();
};

```

(i) Which type of inheritance is shown in the above example?

(ii) Write names of all the member accessible from OutCourse function of class Course.

(iii) Write name of all the members accessible through an object of the class Course.

(iv) Is the function InRegular() accessible inside the function InDistance()? Justify your answer.

(d) Explain the concept of **this** pointer with example.

(2)

(e) Explain the concept of static data member and how is it different from other data members. Explain with an example.

(3)

f) Define a class **BALANCED_MEAL** in C++ with following description: (4)

Private Members:

Access_no	Integer
Food_Name	String of 25 characters
Calories	Integer
Food_type	String
Cost	Float

AssignAccess() Generates random numbers between 10 and 99 and return it.

Public Members

- A function **INTAKE()** to allow the user to enter the values of Food_Name, Calories, Food_type, cost and call function **AssignAccess()** to assign Access_no.
- A function **OUTPUT()** to allow user to view the content of all the data members, if the Food_type is **Fruit**. Otherwise display message, **“Display only for fruit”**

Q3 (a) Give output. Also write reasons (2)

```
void strfunc( char **s)
{
char *n= “world”;
*s=n;
}
void main()
{
char *str= “hello”;
strfunc(&str);
cout<<str<<endl;
}
```

b)Write a function SWAP2BEST (int ARR[], int Size) in C++ to modify the content of the array in such a way that the elements, which are multiples of 10 swap them with the value present in the very next position in the array. (3)

For example :

If the content of array ARR is
80, 66, 45, 20, 44, 54

The content of array ARR should become
66, 80, 45, 44, 20, 54

c) Write a program to sort one dimensional array using insertion sort. (4)

Q4 a)Write a function in C++ to search for a laptop from a binary file “LAPTOP.DAT” containing the objects of class LAPTOP (as defined below). The program will display the records having RAM >2GB. (4)

```
class LAPTOP
{
long ModelNo; float RAM, HDD; char Details[120];
public:
void StockEnter ( ) {cin>>Model No>>RAM>>HDD; gets(Details);}
}
```

```

void StockDisplay( ) {cout<<ModelNo<<RAM<<HDD<<Details<<endl;}
float myLapTopRAM() {
return RAM};
};

```

b) Observe the program segment given below carefully and answer the questions (2)

```

class PracFile
{
    int Pracno;
    char PracName[20];
    int TimeTaken;
    int Marks;
public: void EnterPrac();           // function to enter PracFile details
       void ShowPrac();           // function to display PracFile details
       int RTime()                 // function to return TimeTaken
       { return TimeTaken; }
       void Assignmarks (int M) // function to assign Marks
       { Marks = M; }
};

void AllocateMarks( )
{
    fstreamFile;
    File.open("MARKS.DAT",ios::binary|ios::in|ios::out);
    PracFile P;
    int Record = 0;
    while (File.read(( char*) &P, sizeof(P)))
    {
        if(P.RTime(>50)
        P.Assignmarks(0)
    else
    P.Assignmarks(10)
    _____ //statement 1
    _____ //statement 2
    Record + +;}
    File.close();}

```

If the function AllocateMarks () is supposed to Allocate Marks for the records in the file MARKS.DAT based on their value of the member TimeTaken. Write C++ statements for the statement 1 and statement 2, where, statement 1 is required to position the file write pointer to an appropriate place in the file and statement 2 is to perform the write operation with the modified record.

c) Write a function in C++ to count and display the number of words starting with alphabet 'u' or 'U' or 't' or 'T' present in a text file "poem.txt". (4)

Example If the file "poem.txt" contains the following lines,

Kamlesh is captain of Udaipur cricket team.

Tourist generally visit Zoo of udaipur. Output should be 10.

Q5 a) Write a function *TRANSFERP(int ALL[], int N)*, to transfer all the prime numbers from a one dimensional array ALL[] to another one dimensional array PRIME[]. The resultant array PRIME[] must be displayed on screen. (3)

b) An array PP[40][32] is stored in the memory along the row with each of the elements occupying 10 bytes. Find out the memory location for the element **PP[18][22]**, if the element PP[7][10] is stored at memory location 5000.

c) Write functions to perform **PUSH & POP** operations in an array stack of **integers**. (4)

d) Consider the class: (4)

```
class QUEUE
{
private:
int data[20],front,rear;
public:
QUEUE()
{ front=rear=-1; }
void INSQ(int d); //to insert an element into queue
void DELQ( ); //to delete an element from the queue
void PRINTQ( ); //to print the current status of queue
};
```

Complete the definition of functions of above class.

e) Evaluate the following postfix notation of expression: (3)

30, 6, 4, +, /, 14, +, 4, *

f) Translate the following infix expression into its equivalent postfix notation (3)
A*(B+D)/E-F-(G+H/K)