**Faculty of Information and Communication Technology**

**First-Year \_ ICT**

**ISCE-11021 (C++ Programming) Marking**

**First-Semester Exam, 31st March, 2015**

I(a). Fill in the blanks. (1 mark each)

1. braces , { }
2. library
3. braces, curly braces
4. reformatting
5. a label
6. 0, 1 and 2
7. Prototype
8. Void
9. Life time
10. 2

I(b) True / False

1. False
2. False
3. True
4. True
5. False
6. True
7. False
8. True
9. False
10. True

II(a).Write a statement that gets a numerical value form the user, accepts it and displays it to the user. (2-marks)

intnum; ½ mark

cout<< “Enter a number”; ½ mark

cin>>num; ½ mark

cout<<”Your number is”<<num; ½ mark

(b).Write a while loop that display the number from 1 to 100. (2-marks)

intnum=1; ½ mark

while(num<=100) ½ mark

{ cout<<num; ½ mark

num++; } ½ mark

(c). Create a structure called Minimart that uses three variables of type char, int and float to item-type, quantity and item-cost. (2-marks)

struct Minimart ½ mark

{ char type; ½ mark

int quantity; ½ mark

float item-cost; }; ½ mark

(d). Write a declaration for a function named ExamTest that returns the exam result (type is character) and has three argument parameter (integer type). If three parametersare greater than 50 than return pass else returns fail. (2-marks),

charExamTest (int a, int b, int c) ½ mark

{ if (a>50 && b>50 && c>50) ½ mark

cout<<”pass”; ½ mark

cout<<”fail”; } ½ mark

(e). The output is

1, 2, 3 ½ mark

4, 6 ½ mark

7, 8, 9 ½ mark

10, 11 ½ mark

3(a). Operators such as >>, which read input from the keyboard, must be able to convert aseries of digits into a number. Write a program that does the same thing. It should allowthe user to type up to six digits, and then display the resulting number as a type longinteger. The digits should be read individually, as characters, using getche().Constructing the number involves multiplying the existing value by 10 and then addingthe new digit. (Hint: Subtract 48 or ‘0’ to go from ASCII to a numerical digit.)

Here’s some sample interaction:

Enter a number: 123456

Number is: 123456

#include<iostream.h> 1 mark

void main( ) 1 mark

{

inti; long output; char input; 1 mark

cout<<"Enter a number (Maximum six characters): "; 1 mark

output = 0; i=0; //ASCII('\r') == 13 1 mark

while((input=getche()) != 13 &&i<6) 1 mark

{ output = 10\*output + (input - 48); 1 mark

i++; 1 mark

}

if(i == 6) cout<<"\b "; 1 mark

cout<<"\nNumber is: "<<output; 1 mark

}

3(b). (10 marks)

#include<iostream.h> 1 mark

void main( )

{

inti, num;

longfact; 1 mark

do{

cout<<"Enter a number: "; 1 mark

cin>>num; 1 mark

fact=1; 1 mark

for(i=2; i<=num; i++ ) 1&1/2 mark

fact \*=i; 1 mark

cout<<”Factorial is “<< fact<<endl; 1 mark

}while(num != 0); 1&1/2 mark

}

4(a). Create a structure of type time that contains three members: hours, minute and second, all of type int. Have the user enter a time format h:m:s, store it in a variable of type struct time, then calculate the total second and print out the result to the user.(10 marks)

#include<iostream.h> (1 mark)

struct time{ (2 mark)

int h, m, s;

};

void main( )

{

time t; (1 mark)

charch; inttotal\_second; (1 mark)

cout<<”Enter time value, h:m:s”; (1 mark)

cin>>t.h>>ch>>t.m>>ch>>t.s; (1 mark)

total\_second = t.h\*3600 + t.m\*60 + t.s; (2 mark)

cout<<”Total Second=”<<total\_second; (1 mark)

}

(b). Create a structure called Volume that uses three variables of type Distance (from theENGLSTRC example) to model the volume of a room. Initialize a variable of type Volumeto specific dimensions, then calculate the volume it represents, and print out the result.To calculate the volume, convert each dimension from a Distance variable to a variableof type float representing feet and fractions of a foot, and then multiply the resultingthree numbers.

#include<iostream.h> ½ mark

struct Distance{int feet; float inches;}; 1 mark

struct Volume{Distance x, y, z;}; 1 mark

void main() ½ mark

{ Volume dimension; char c;  1 mark

do{ cout<<"Enter x, y & z ...\n"; ½ mark

cin>>dimension.x.feet>>c>>dimension.x.inches 1 mark

>>dimension.y.feet>>c>>dimension.y.inches

>>dimension.z.feet>>c>>dimension.z.inches;

cout<<"the volume is : "<<(dimension.x.feet+dimension.x.inches/12)\* 1 mark

(dimension.y.feet+dimension.y.inches/12)\* (dimension.z.feet+dimension.z.inches/12);  1 mark

cout<<“Press c to continue or any key to exit."<<endl; 1 mark

}while(getch()=='c'); 1 mark

} ½ mark

(c ). (10 marks)

#include<iostream.h> (1 mark)

structfraction{ (2 mark)

intnum, den;

};

void main( )

{

fractionf1, f2, f3; (1 mark)

charch;

cout<<”Enter first fraction:”;

cin>>f1.num>>ch>>f1.den; (1&1/2 mark)

cout<<”Enter second fraction:”;

cin>>f2.num>>ch>>f2.den; (1&1/2 mark)

f3.num= (f1.num\*f2.den) + (f2.num\*f1.den); (1 mark)

f3.den= f1.den \* f2.den; (1 mark)

cout<<”Sum=”<<f3.num<<ch<<f3.den; (1 mark)

}

5(a). Raising a number n to a power p is the same as multiplying n by itself p times. Write afunction called power() that takes a double value for n and an int value for p, andreturns the result as a double value. Use a default argument of 2 for p, so that if thisargument is omitted, the number n will be squared. Write a main() function that gets valuesfrom the user to test this function.

#include<iostream> ½ mark

double power(double n, int p=2); 1 mark

int main() ½ mark

{ double n; int p=2,result; 1 mark

cout<<"Enter n: "; cin>> n; ½ mark

cout<<"Enter p: "; cin>> p; ½ mark

result=power(n,p); 1 mark

cout<<"The power is "<<result; ½ mark

return 0; ½ mark

}

double power(double n, int p) 1 mark

{ for(int ret=1; p>0; p--) 1 mark

ret\*=n; 1 mark

return ret; 1 mark

}

(b). #include<iostream.h> ½ mark

struct Distance { int feet, float inches;}; ½ mark

Distance sumdist(Distance d1, Distance d2); ½ mark

int main() ½ mark

{ Distance d1, d2, d3; ½ mark

cout<<"Enter d1: "; cin>> d1.feet>>d1.inches; ½ mark

cout<<"Enter d2: "; cin>> d2.feet>>d2.inches; ½ mark

d3=sumdist(d1,d2); ½ mark

cout<<"The sum of distance is "<<d1.feet<<”+”<<d2.feet<<”=”<<d3.feet;1 mark

cout<<"The sum of distance is "<<d1.inches<<”+”<<d2.inches<<”=”<<d3.inches;

return 0; ½ mark

}

Distance sumdist(Distance d1, Distance d2) ½ mark

{ int t1,t2,t3; ½ mark

Distance d; ½ mark

t1=(d1.feet\*12)+d1.inches; ½ mark

t2=(d2.feet\*12)+d2.inches; ½ mark

t3=t1+t2; ½ mark

d.feet=t3/12; ½ mark

d.inches=t3%12; ½ mark

returnd; ½ mark

}