SOLUTIONS

TEST 1
SEMESTER I 2015/2016

SUBJECT CODE : SCSJ1013

SUBJECT NAME : PROGRAMMING TECHNIQUE I

PART A

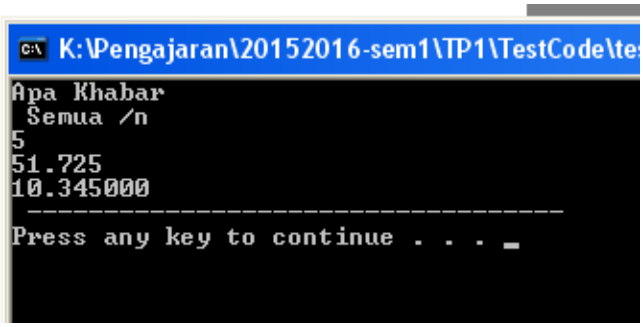
1)

z	=	(	12	+	4	)	/	4	+	30	/	3	-	3
				1			**2**		**4**		**3**		**5**	

Answer = 11

2)

(a)	10.345
(b)	10.35
(c)	10.3
(d)	10
(e)	1e+001
(f)	**Apa Khabar** **Semua /n**
(g)	5
(h)	51.725
(i)	10.345000



3)

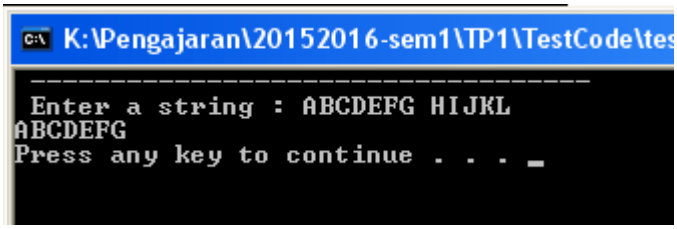
Code 1: [2 marks]

```
cin>>x;
cout<<x<<endl;
```

Output:

Solution:

A	B	C	D	E	F	G						



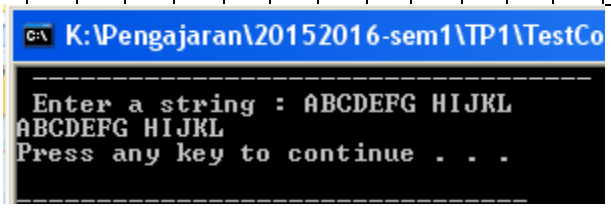
Code 2: [2 marks]

```
cin.getline(x,13);
cout<<x<<endl;
```

Output:

Solution:

A	B	C	D	E	F	G		H	I	J	K	L



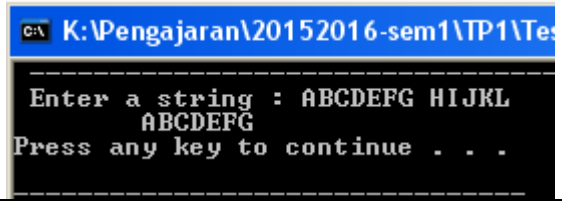
Code 3: [3 marks]

```
cin>>x;
cout<<setw(13)<<x<<endl;
```

Output:

Solution:

						A	B	C	D	E	F	G

4)

1	`// Program ABC (1)`
2	`#include <iostream> (1)`
3	`using namespace std; (1)`
4	`int main() (1)`
5	`{ (1)`
6	`cout << "Success\n"; (1)`
7	`cout << "Success\n\n"; (1)`
8	`cout << "Success"; (1)`
9	`cout << "Success\n"; (1)`
10	`return 0; (1)`
11	`} (1)`

PART B : Selection Structure [marks]

1.

	If else statement	Conditional expression

i.	`if (x<y)`
	`  q = 0;`
	`else`
	`  q = 1;`
		q = (x<y)? 0 : 1; or
		(x<y)? q=0:q=1;

ii.	`if (x<y)`
	`  q = a + b;`
	`else`
	`  q = x * 2;`
		q = (x<y)? a+b : x*2; or
		(x<y)? q=a+b:q=x*2;

iii.	`if (x<y)`
	`  q = x * 2;`
	`else`
	`  q = a * b;`
		q = (x<y)? x*2 : a*b; or
		(x<y)? q=x*2:q=a*b;

iv.	`if (x == y)`
	`  q = 1;`
	`else`
	`  q = 0;`
		q = (x==y)? 1 : 0; or
		(x==y)? q=1:q=0;

2.

i.

```
if ( (freq >=100) && (freq <=10000))
          cout<<"Acceptable"<<endl;
   else
          cout<<"Unacceptable"<<endl;
```

(3 marks)

ii.

```
  if ((age >=18)&&(age <=30)&&(weight >= 50)&&
(weight<=65))
          cout<<"Pass"<<endl;
   else
          cout<<"Fail"<<endl;
```

(3 marks)

iii.

```
if year >=2010)
{    if ((cc >=1.5) && (cc <=2.0)
        cout<<"Buy"<<endl;
     else
        cout<<"Not Buy"<<endl;

}
else
{    if ((cc > 2.0)

}
     cout<<"Unacceptable"<<endl;
```

(4 marks)

3.

Code	**Can the program execute**		**Output**	**Error Description**
	Yes	No		
Example: x=1 **cout<<x;**		√	-	**x=1 has no semicolon**

`int age=55;`
`if ( age >= 65 );`
`cout << "Age is greater than or`
	√		Age is greater than 65	

`equal to 65" << endl;`				

`int x=8, total=0;`
`  while (total <= 10)`
`  total += x;`
`  x++;`
`  cout<<x;`
	√		9	

`int x;`
`  for (x = 3, x >= 1, x-- )`
`  cout << x << endl;`
		√		The statement in for loop should have a semicolon

`int grade = 95;`
`  if (grade>90)`
`  cout<<"Excellent"<<endl;`
`  else;`
`  cout<<"Good"<<endl;`
	√		Excellent
			Good	

`int test = 1;`
`switch (value % 2)`
`{`
`  case 0: cout << "Even integer" <<`
`endl;`
`  case test: cout << "Odd integer" <<`
`endl;`
`}`
		√		Case –value cannot be a variable

`counter = 2;`
`do`
`{`
`  cout << counter << endl;`
`  counter += 2; }`
`While ( counter < 100 );`
		√		

`int n=4;`
`  if (!n%2)`
`  cout<<"this is true";`
`  else`
`  cout<<"this is false";`
	√		This is false	

`int MyNumber = 1;`
`  int count;`
`  for (count =1; count<=(MyNumber + 1);`
`count++)`
`  cout<<count<<" "<<MyNumber<<endl;`
	√		1 1
			2 1	

4.

Code	Output
`int i=10, j=3,k = 20;` `cout<<((j < 4 )|| (j == 5) && (i <= k));`	1

`int x = 25;`
`if (x >= 12)`
`  cout<<"Mid";`
`cout<<"Term";`
	MidTerm

`int x = 25;`
`if (x / 2 == 12){`
`  cout<<"Mid";`
`  cout<<"Term";`
`}else`
`  {`
`  cout<<"TP1";`
`  cout<<"C++";`
`}`
	MidTerm

`int n =0;`
`if (n=0)`
`   cout<<"Yes";`
`else`
`   cout<<"No";`
`}`
	No

`int x=3, y=9;`
`if (x >= y)`
`   if (y > 0)`
`      x = x * y;`
`   else if (y < 4)`
`          x = x - y;`
`cout<<x;`
	3

5.

Boolean expression	Output
`cout<<(Quiz1 == Quiz2)<<endl;`	**0**
`cout<<(Score1 >= Score2) <<endl;`	**0**
`cout<<(Score1 > MAXSCORE) <<endl;`	**0**
`cout<<((Score1 + Quiz1) <= (Score2 + Quiz2))<<endl;`	**0**
`cout<<(MI == MI2) <<endl;`	**0**
`cout<<(MI < MI2) <<endl;`	**1**
`cout<<('Z' < 'a') <<endl;`	**1**
`cout<<(Name1 < Name2) <<endl;`	**1**
`cout<<!(Score1 > Score2)<<endl;`	**1**

`cout<<!(Name1 < Name2) <<endl;`	**0**

PART C : Loop Structure [marks]

1a)

Answer

(a)

___16____

(b)

____2___

(c)

____1___

(d)

_____-1__

setiap satu jawapan = 1 markah (4 markah) dan jalan kerja dpt 4 markah utk setiap satu jawapan, so, total adaalah 8 markah keseluruhan kerana kesusahan nak tentukan nilai2 tersebut. * asalkan ada conteng2 di situ bagi je markah.

1b)

2, 0, -1, -2,

*1M for each answer

1c)

```
int y=2;
do {
   if (y > 1024 ) break;
   cout << y << ", ";
   y *= 2;
} while (y>1);
```

***setiap baris, markahnya adalah 2 maka total adalah 12 markah mengikut tahap kompleksitinya**

1d)

X= 128 (1m)

Y = 256 (1m)

1e)

200, 400, 800,

* ANSWER MUST IN THIS FORM

each answer 1 mark so total = 3 marks.

The arrangement of data = 1 mark

Total = 4 marks

2)

a)

```
Output
14, 12, 10, 8, 6, 4, 2, 0, -1, -2,
*setiap satu jawapan = satu markah (10 markah)
```

b)

```
Output
2, 4, 8, 16, 32, 64, 128, 256, 512, 1024,
*setiap satu jawapan = satu markah (10 markah)
```

3)

```
1  int num, factorial=1;
2  cout<<" Enter Number To Find Its Factorial:  ";
3  cin>>num;
4  for(int a=num;a>=1;a--)    (2M)
5  { (1M)
6     factorial=factorial*a;  (2M)
7     cout << a; (1M)
8     if (a == 1) (1M) continue; (1M)
```

```
9     cout << "*"; (1M)
10  }  (1M)
11  cout<<"="<<factorial (1M) << endl; (1M)
12  cout<< "Ths is factorial for " << num << endl; (1M)
```

4)

a.	n
b.	first
c.	second
d.	n
e.	c
f.	c
g.	next
h.	c
i.	second
j.	first
k.	second
l.	second
m.	next
n.	c

setiap satu 2 markah

Skema

```
1  int n, c, first, second, next;
2
3  cout << "Enter the number of terms of Fibonacci series you want" <<
4  endl;
5  cin >> n;
6  cout << "Enter the first number you want : " << endl;
```

```
7   cin >> first;
8   cout << "Enter the second number you want : " << endl;
9   cin >> second;
10
11  cout << "First " << n << " terms of Fibonacci series are :- " <<
12  endl;
13
14  c=0;
15  while (c<n)
16  {
17    if ( c == 0 )
18          next = first;
19    else if (c == 1)
20          next = second;
21    else
22        {
23          next = first + second;
24          first = second;
25          second = next;
26        }
27    cout << next << endl;
28    c++;
    }
```

5)

5)

```
// Program C.1
#include <iostream>
using namespace std;

int main()
{
     int count = 0;          // The total count of numbers entered
     int positive = 0;       // The count of positive numbers
     int negative = 0;       // The count of negative numbers
     int number;             // The number entered


     while (count<30)   (1M)

{   (1M)

cout << "Enter Number : " ;   (1M)

cin >> number;   (1M)


if (number > 0) positive++;     (1M)

else if (number < 0) negative++;    (1M)


count++;    (1M)

}   (1M)


cout << "The positive number entered is " << positive << endl;

(1M)

cout << "The negative number entered is " << negative << endl;

(1M)

      return 0;
}
```

6a)

i. Convert the flowchart into an equivalent c++ code excerpt [4 marks]

```
sum = 0;
i=5
while (i < 10)
{
      sum = sum+1
      i = i+2;
}
cout<<sum;
```

ii. How many times the loop repeat. [2 marks]

3 times

iii. Modify your code by using decrement counter loop without changing the variables involved and the number of loops involved

[4 marks]

```
sum = 0;
i=10;
while (i > 5)
{
      sum = sum+1
      i = i-2;
}
```

6. b)

i. Convert the flowchart into an equivalent c++ code excerpt [4 marks]

```
int sum = 0, count = 0;
do{
     count = count+1;
     sum = sum+count;
}
while (count <10)
cout <<sum;
```

ii. How many times the loop repeats [2 marks]

9 times

iii. Modify the code if a decrement counter is used without changing the variables and the number of loops involved [4marks]

```
int sum = 0, count = 20;
do{
    count = count-1;
    sum = sum+count;
}
while (count >10)
cout <<sum;
```

7)

```
1  //program A.1
2  using namespace std;
3  int main()
4  {
5      char grade; // one grade
6      int aCount = 0; // number of characterAs
7      int bCount = 0; // number of Bs
8  int cCount = 0; // number of Cs
9  cout << "Enter the letter grades[Enter 'e' character  to end input]"<< endl;
10 cin>>grade;
11
12 // loop until user types char e
13 while (grade!= 'e') {                                    [2 marks]
14
15 //use switch to identify the character
16 switch (grade) {                                  [2 marks]
17
18 //case for  grade A, increment the variable aCount          [3 marks]
19   case 'A':
20     ++aCount;
21     break;
22
23 //case for  grade B, increment the variable aCount          [3 marks]
24 case 'B':
25     ++bCount;
26     break;
27
28 //case for  grade C, increment the variable aCount          [3 marks]
29 case 'C':
30     ++cCount;
31     break;
32
33 // add default  statement to catch all other alphabets and prints “Incorrect letter grade entered”
```

```
34                                                          [3 marks]
35  default:
36        cout << "Incorrect letter grade entered."<< endl;
37        break; // optional; will exit switch anyway
38
39  } // end switch
40  //ask for another input letter grades                   [2 marks]
41  cout << "Enter the letter grades[Enter 'e' character  to end input]"<< endl;
42    cin>>grade;
43  } // end while
44                  // output summary of results            [2  marks ]
45              cout << "\n\nTotals for each letter grade are:"
46              << "\nA: " << aCount // display number of A grades
47              << "\nB: " << bCount // display number of B grades
48              << "\nC: " << cCount // display number of C grades
49          << endl;
50
51                  system("PAUSE");
                    return 0; // indicate successful termination
    } // end function main
```

8)

```
//Includes suitable library
#include <iostream>
#include <iomanip>

using namespace std;

#define LOW 32
#define HIGH 212
#define EXIT -99

int main()
{
int userVal, betweenCnt = 0, extremeCnt = 0, sum = 0;
double avg;


cout << "Enter a number (" << -99 << " to quit):";
cin >> userVal;


//while the user has not entered the exit value
//if the user's value is between LOW and HIGH, then increment the
extremeCnt values.
//Otherwise, add the user's value to variable sum and increment the count
//of variable betweenCnt
//get the next number from the user


while( userVal != -99 )
  {
    if( userVal < LOW || userVal > HIGH )
        extremeCnt++;
```

```
    else
    {
        sum += userVal;
        betweenCnt++;
    }

   cout << "Enter a number (" << EXIT << " to quit):";
   cin >> userVal;
  }


//If the user entered at least 1 valid number, calculate the average
//and then display it and the number of extreme values that were
//entered.

if ( betweenCnt > 0 )
  {
  avg = (double) sum / betweenCnt;

  cout << endl << endl << "Average is: "
       << setiosflags(ios::fixed) << setprecision(2) << avg
       << endl << "There were " << extremeCnt << " extreme values";
  }

return 0;
}
```