SOLUTIONS

PART A : Basics of C++ **[29 marks]**

1. (a) 1.5 marks (0.5 mark for each correct order) - RUHAIDAH

z	=	(	10	+	0.4	)	/	2	+	25	/	4	-	x	++
				1			**3**		**5**		**4**		**6**		**2**

1. (b) 3 marks (0.5 mark at each step/line of evaluation) - NORSHAM

```
x = a * b / (-c * 31 % 13) * d;
    a * b / (-15 * 31 % 13 )  *d
    a * b / (-465  % 13 )  *d
    a * b / (-10 )  *d
    200 /(-10) * d
    -20 *d
    -160
```

1. (c) 6 marks (1 mark per line of execution) – NORSHAM

No.	Statement	Value after execution		
		`first`	`second`	Expression
1.	`first=first + second;`	***31.7***	***27***	***31.7***
2.	`second=first + second;`	***4.7***	***31***	***31***
3.	`static_cast<int> (first + second);`	***4.7***	***27***	***31***
4.	`second= second % static_cast<int>first;`	***4.7***	***3***	***3***
5.	`first=second % static_cast<int> (first);`	***3.0***	***27***	***3.0***
6.	`first=second + static<int>first;`	***31.0***	***27***	***31.0***

SOLUTIONS

2. 5 marks (1 mark each)

A=3 B=-17.3 C=0 D=-14 COUNT=4

3. 5.5 marks (1 mark each)

2	3	.	1	3			
2	3	.	1	2	8		
2	3						
		2	3	.	1	3	
1	3	4	5	.	4	6	
	8	6	6	.	8	9	
2	3	.	1				
1	3	4	5	.	5		
8	6	6	.	9			
2	.	3	4	0	0	0	0
2	.	3	4	0	0	0	0

4. 8 marks

```
01.
11. // a. declare  x1, y1 ,x2 and y2 as double variable  (2m)
12. double x1,y1,x2,y2;
13.
14. // b. declare distance as double variable          (0.5m)
15. double distance;
16.
17. // prompt user for data
18. cout <<"Enter four double for value of x1,x2,y1,and y2";
19.
20. // c. read four double, x1, y1, x2, and y2 from user  (2m)
21. cin >> x1 >>y1>> x2>>y2;
22.
23. // d. calculate the distances of two points           (3m)
24. distance = sqrt ( pow ((x2-x1),2) + pow ((y2-y1),2) ) ;
25.
26. // e. display the distances of two points          (0.5m)
27. cout <<"The distances of two points are "<<distance<< endl;
28.
```

SOLUTIONS

PART B : Selection Structure [25 marks]

1. 4 marks (1 mark each)
   a) True
   b) True
   c) False
   d) False
2. 4 marks

   a) `Your penalty charge is RM6.00` 1 mark

   b)

```
1.float fine; int day;
2.   cin>>day;
3.   if (day>10)                    1 mark
4.       fine=20.00;
5.   else if (day >7)               1 mark
6.       fine=10.00;
7.   else if (day >=3)              1 mark
8.        fine=6.00;
9.  else
10.      fine=0.0.
11.   cout<< "Your penalty charge is RM"<< fine;
```

3. 5 marks (1 mark each) – NORANIAH

i	Output
0	AB
1	B
2	CE
3	DE

The final output for this program is :

ABBCE
DE

SOLUTIONS

4. 7 marks

```
cin >> vCode     // 0.5 mark

cin >> distance;      // 0.5 mark


    switch (vCode)    // 1 mark
    {
        case 'C'  : vRate = 0.5; break;     // 1 mark
        case 'B'  : vRate = 0.85; break;    // 1 mark
        case 'T'  : vRate = 1.0; break;     // 1 mark
        case 'M'  : vRate = 0.0; break;     // 1 mark
     }

     toll = vRate * distance;  // 0.5 mark
     cout << "Toll to be paid is RM" << toll; // 0.5 mark
```

5. 5 marks (1 for each correct if statement)

```
if (currency == 1)
{       rate = 0.306;
   USD = MYR * rate;
   cout << "You will be getting USD" << USD << endl;  }
else if (currency == 2)
{       rate = 0.192;
   GBP = MYR * rate;
   cout << "You will be getting GBP" << GBP << endl;  }
else if (currency == 3)
{       rate = 0.39;
   SGD = MYR * rate;
   cout << "You will be getting SGD" << SGD << endl;  }
else if (currency == 4)
{       rate = 3737;
   IDR = MYR * rate;
   cout << "You will be getting IDR" << IDR << endl;  }
else if (currency == 5)
{       rate = 1.15;
   SAR = MYR * rate;
   cout << "You will be getting SAR" << SAR << endl;  }
```

SOLUTIONS

PART C : Loop Structure [31 marks]

1. 6 marks (0.5 mark each)

(a) 12, 14, 16, 18, 20, 22,

(b) 2, 6, 18, 54, 162, 486,

2. 5 marks

```
int n;                                    // 0.5m
 cout << "Enter an integer number: ";
 cin >> n;                                // 0.5m

 int factorial = 1;                       // 0.5m
 for (int i=n; i>1; i--)                  // 2m
   factorial = factorial * i;             // 1m

 cout << "Factorial " << factorial <<endl; // 0.5m
```

3. 6 marks

```
int n, fiboNumber;                  // 0.5m
 cout << "Enter the value of n: ";
 cin >> n;                           // 0.5m

 int f = 0, s=1;                   // 1m
 int i=3;                          // 0.5m

 while (i<n)    // 1m
 {   fiboNumber = f + s;       // 0.5m
     f = s;                    // 0.5m
     s = fiboNumber;           // 0.5m
     i++;                      // 0.5m
  }
  cout << n << "-th Fibonacci number is "
       << fiboNumber << endl;      //0.5m
```

SOLUTIONS

4. 5 marks

Answer using WHILE loop

```
while (count < 30)
     {
        cout << "Enter a number: ";
        cin >> number;

        if (number >0) positive++;
        else if (number <0) negative++;

        count++;
     }

   cout << "Number of positives: " << positive << endl;
   cout << "Number of negatives: " << negative << endl;
```

Answer using FOR loop

```
for (count=0;count<30; count++)
     {
        cout << "Enter a number: ";
        cin >> number;

        if (number >0) positive++;
        else if (number <0) negative++;

     }

     cout << "Number of positives: " << positive << endl;
  cout << "Number of negatives: " << negative << endl;
```

5. 9 marks - JUMAIL

```
cout <<"Enter the item's price: ";
cin >> itemPrice;          // 0.5m


while (itemPrice>0)     // while and structure 1m,   condition 0.5m
{
      if (highestPrice<itemPrice)          // if 1m, exp 1m
         highestPrice = itemPrice;         // 1m

      cout <<"Enter the number of item: ";
      cin >> itemCount;                    // 0.5m
```

SOLUTIONS

```
        double price = itemCount*itemPrice;  // 1m
        totalPayment += price;               // 1m

        cout << endl;
        cout <<"Enter the item's price: ";
        cin >> itemPrice;                    // 0.5m
}

cout << endl << endl;
cout <<"Total Payment: "
     << totalPayment << endl;                // 0.5m

cout <<"The most expensive item: RM "
     << highestPrice << endl;                // 0.5m
```

Alternative answer – using a do-while loop

```
do     // 0.5m
{
     cout <<"Enter the item's price: ";
     cin >> itemPrice;         // 1m

   if (itemPrice==0) break;  // 1m

   if (highestPrice<itemPrice)          // 1m
       highestPrice = itemPrice;        // 1m

       cout <<"Enter the number of item: ";
       cin >> itemCount;                      // 0.5m
       cout << endl;

      double price = itemCount*itemPrice;   // 1m
      totalPayment += price;                // 1m

} while (true);      // while 0.5m,   condition 0.5m

cout << endl << endl;
cout <<"Total Payment: "
     << totalPayment << endl;                // 0.5m

cout <<"The most expensive item: RM "
     << highestPrice << endl;                // 0.5m
```