

# BUKIT VIEW SECONDARY SCHOOL

## 2018 PRELIM EXAMINATION

## Secondary 4 Express

## COMPUTING

7155/01

#### **PAPER 1 Marking Scheme**

\_\_\_\_\_Q1

1(a)



Qn	Answer	Mark
2(a)	1110 1001 (binary)	
	= 1*128 + 1*64 + 1*32 + 1*8 + 1*1	
	= 233 (denary)	
2(b)	121 / 16 is 7 remainder 9	
	121 (denary) = 79 (hexadecimal)	
2(c)	E (hexadecimal) = 1110 (binary)	
	4 (hexadecimal) = 0100 (binary)	
	E4 (hexadecimal) = 1110 0100 (binary)	
2(d)	1001 (binary) = 9 (denary) = 9 (hexadecimal)	
	1100 (binary) = 12 (denary) = C (hexadecimal)	
	11001001 (binary) = 9C (hexadecimal)	

**Q2** 1 mark for correct answer and 1 mark for showing relevant working.

**Q3** 1 mark for correct answer at the correct blank of the text.

Encoding

Decoding

Firewall

Private

Spyware

Data corruption

Qn	Answer						
4(a)	<ul> <li>Inputs:</li> <li>The day in the month of May</li> <li>Average temperature of each corresponding day in May</li> </ul>						
4(b)	<ul> <li>Outputs:</li> <li>The day in May with the highest temperature</li> <li>The temperature of the day having the highest average temperature</li> </ul>						
4(c)	<ul> <li>Processes required:</li> <li>Initialise a variable to represent the highest temperature</li> <li>Read in the 30 data of temperature and day using a list / array or otherwise</li> <li>The average temperature readings and its respective day of the month are to be linked</li> <li>Sort the temperature to get the highest value and extract the day of the month or compare the temperature to get the highest value and the day of the month.</li> </ul>						
4(d)	No, we do not expect 100°C to be a valid room temperature.	+					

	Statement	Terms	Mark
(a)	Creative works that are the creations of the mind and can exist purely as data with no physical form.	Intellectual property.	
(b)	The legal right of owners to control the use and distribution of their intellectual property.	Copyright	
(c)	Official description of activities that are authorised or forbidden by the owner of intellectual property.	Licence	
(d)	Software where the legal protections that are typically granted to intellectual property have either expired, been surrendered or are simply inapplicable.	Public domain software	
(e)	Demonstration software that is distributed for free but for a specific evaluation period only.	Shareware	

- 6(a) Machine code are processor's instruction set which specifies how it should be directly executed on a computer's processor and is represented in byte form.
- 6(b) Compiler Code translator program that translates source code into machine code completely before running the compiled program.

Interpreter - Code translator program that translates source code into machine code while the interpreted program is running

6(c) Command line interface is a means of interacting with a program such that commands are given as lines of text as inputs to the computer

Q7

- 7(a) Ring topology can operate over larger distances and handle more data than a bus topology.
- 7(b) Star topology
- 7(c) Ring topology. In this setup, each computer is connected to two other computers in a ring formation. All the data is passed around in the same direction. If a failure occurs in the cable or if a computer breaks down, the entire network will fail to function.

#### **Q**8

RAM	ROM		
Read and write: stored data can be	Read only: stored data cannot be		
easily changed	easily changed		
Volatile: loses data once power	Non-volatile: retains data regardless		
supply to the computer is interrupted	of whether the power supply is		
	switched on or off		
Purpose: to store data and	Purpose: to store data and		
instructions temporarily so that they	instructions that would be needed		
can be quickly accessed by the	for a computer to start up or before		
processor when needed	data can be loaded into RAM		

8(a) 1m for each difference. Max 2m

#### 8(b) (i) Advantage

- Much faster in reading and storing data than magnetic external storage
- Not as vulnerable to drops, mechanical shocks, scratches or fingerprints
- Smaller in size and lighter in weight than magnetic optical external storage
- Uses very little power and produces no noise
- 8(b) (ii) Disadvantage
  - Much more expensive than magnetic external storage

### (i) Central processing unit

- Part of the computer that processes data and follows instructions
- (ii) Arithmetic Logic Unit
  - Part of the processor that processes data by performing basic mathematical and logical operations.

8(c)

- **Q9** (a) Data validation is a process of ensuring that the input data supplied to a system satisfies a set of requirements or formats
  - (b) In the following extracts of codes, give the name of validation check

	Extract of codes	Name of validation check
(i)	while True: s = input("Enter name: ") if (len(s)!=0): break else: print("Error, try again")	Presence Check
(ii)	while True: p = float(input("Enter p: ")) if p >= 0.0 and p<= 100.0 : break else: print("Error, try again")	Range Check
(iii)	while True: s = input("Enter name: ") if len(s) == 2 and s[0] in "AB" and s[1].isdigit(): break else: print("Error, try again")	Format Check
(iv)	while True: s = input("Enter Postal Code: ") if (len(s)==6): break else: print("Error, try again")	Length Check

10(a) Maximum 5 marks.

T1	T2	Т3	Α	В	С	OUTPUT
0	0	0				
1			5	2	1	
	1		4	9	7	
2			6	1	3	
		`1	5	8	9	
	2		1	11	3	
			0	0	0	
						2,2,1

10b any data set (except 0, 0, 0) where 2/3 of the numbers are the same e.g. 2, 8, 8 - flowchart does not take into consideration numbers which have the same value

```
1
      count = 0
2
      sum = 0
3
      max = 0
4
      repeat
5
           count = count + 1
6
           input num[count]
7
           if num[count] > max then
8
              max = num[count]
9
              j = count
10
           endif
11
           sum = sum + num[count]
12
      until count = 40
13
      Output sum/40, j, max
```

Error 1 :	3	max = 100
Correction :	3	max = 0
Error 2 :	5	(missing code)
Correction :	5	count = count + 1
Error 3 :	11	<pre>sum = sum + num[j]</pre>
Correction :	11	<pre>sum = sum + num[count]</pre>
Error 4 :	12	until count = 39
Correction :	12	until count = 40

The program will only output one of the registration number of the class even if there are 2 or more top students sharing the same marks.



(b)

L	Т	Р	Working Space				Y
			T'	P'	T' and L	P' and T	
0	0	0	1	1	0	0	0
0	0	1	1	0	0	0	0
0	1	0	0	1	0	1	1
0	1	1	0	0	0	0	0
1	0	0	1	1	1	0	1
1	0	1	1	0	1	0	1
1	1	0	0	1	0	1	1
1	1	1	0	0	0	0	0

```
maxscore = 0
studentcount = 40
for count = 1 to 40
   input name[count]
     if name[count] <> "end" then
         input marks[count]
         if marks[count] > maxscore then
             maxscore = marks[count]
             index = count
         endif
     else
          count = 40
     endif
next count
for i = 1 to 40 ## This will print out all the top scorers
  if marks[i] = maxscore
     output name[i], count[i]
 endif
next i
```

```
##Accept
##output name[index], count[index]
```