SECTION 1

THEORY

1. (a) Name the hardware component that performs EACH of the following functions:

(i) Performs calculations and/or comparisons
   (1 mark)

(ii) Holds the data and programs that are currently being used by the Central Processing Unit (CPU)
    (1 mark)

(iii) Contains instructions that are used during the booting of the computer
     (1 mark)

(b) Mike bought a notebook computer with the following specifications:

<table>
<thead>
<tr>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intel® Atom Processor® N270 (1.6GHz/533Mhz FSB/512K cache)</td>
</tr>
<tr>
<td>1GB DDR2 SDRAM</td>
</tr>
<tr>
<td>10.1&quot; Widescreen Display (1024 x 600)</td>
</tr>
<tr>
<td>Intel Graphics Media Accelerator (GMA) 950</td>
</tr>
<tr>
<td>160GB, 2.5 inch, 5400RPM SATA Hard Drive</td>
</tr>
<tr>
<td>3 USB Ports</td>
</tr>
<tr>
<td>Wireless 802.11g (1397) Mini Card</td>
</tr>
<tr>
<td>24WHR Lithium-Ion Battery (3-cell)</td>
</tr>
</tbody>
</table>

Using the computer specifications listed above, state the specifications for EACH of the following components:

(i) Type, capacity and speed of the hard drive
    (3 marks)

(ii) Memory capacity
     (1 mark)

(iii) Resolution of the display
     (1 mark)

(c) Indicate the type of method used to access data for the following:

(i) Hard drive
    (2 marks)

(ii) Magnetic tape

Total 10 marks
2. (a) Match EACH of the following applications with the most appropriate device. In your answer booklet write the application number with the device letter next to it to indicate your choice.

<table>
<thead>
<tr>
<th>Application No.</th>
<th>Application</th>
<th>Device Letter</th>
<th>Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cheque Processing</td>
<td>A</td>
<td>Biometric systems</td>
</tr>
<tr>
<td>2</td>
<td>Point-of-sale</td>
<td>B</td>
<td>Joystick</td>
</tr>
<tr>
<td>3</td>
<td>Security</td>
<td>C</td>
<td>Plotter</td>
</tr>
<tr>
<td>4</td>
<td>Games</td>
<td>D</td>
<td>Magnetic ink character recognition</td>
</tr>
<tr>
<td>5</td>
<td>Architectural Design</td>
<td>E</td>
<td>Bar code reader</td>
</tr>
</tbody>
</table>

(b) Consider the following scenarios:

Scenario 1: Mike communicates with his computer by typing in specific commands using a specific language to get tasks done.

Scenario 2: Mary communicates with her computer by using the mouse and selecting pictures representing tasks.

(i) Name the type of interface indicated in EACH scenario. (2 marks)

(ii) Which of the above interfaces is MORE user friendly for someone who is learning to use a computer? (1 mark)

(iii) State the type of program that provides the user interface. (1 mark)

(iv) Name ONE type of interface other than those named in (b) (i) above. (1 mark)

Total 10 marks
6. (a) The decimal number 53 is represented by 00110101. Find the two's complement 8-bit representation of the decimal number -53. Show all working.

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(2 marks)

(b) Find the BCD of a signed decimal number +579.

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(4 marks)

(c) The hexadecimal representation of a decimal number is 5D. Find the decimal number.

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(2 marks)

(d) The ASCII representation of the character “M” is 1001101. Determine the ASCII representation of the character “O”.

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(2 marks)

Total 10 marks
12. Consider the following program in Pascal, and answer the questions that follow:

```
Program HUM (input, output);
VAR   CSEC:array[1..8] of integer;
      Start, inc: integer;
Begin
  Inc := 0;
  FOR Start := 1 TO 8 DO
    CSEC[Start] := Inc;
End.
```

(a) State the name of the program.  
(b) State the name of the array.  
(c) State the size of the array.  
(d) Explain the purpose of the array.

Total 5 marks

END OF TEST