Section A

Answer all questions

I/ A given magnetic disk has the following parameters:
- NO. of heads = 2
- NO. of sectors = 40
- NO. of tracks = 36
Compute the disk capacity. (10 marks).

II/ In a given system, the processor speed is 2.8 GHZ. Compute the time required for a complete Read or Write operation. (10 marks).

III/ Design an addressing scheme for eight identical memory regions each is 16 KB capacity. Draw necessary diagrams. Show the addresses of the first and last cell in each region. (10 marks).

IV/ Given that, the width of a given address buss is 24 lines. Compute the corresponding addressability. (10 marks).

V/ Draw an execution follow up table to trace the execution of the following program:

<table>
<thead>
<tr>
<th>Memory Cells</th>
<th>CPU Registers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Program Counter (PC)</strong></td>
<td>4306</td>
</tr>
<tr>
<td><strong>Instruction Register (IR)</strong></td>
<td>1801</td>
</tr>
<tr>
<td><strong>Accumulator (Acc)</strong></td>
<td>00AB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Address</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>4306</td>
<td>1801</td>
</tr>
<tr>
<td>4307</td>
<td>5802</td>
</tr>
<tr>
<td>4308</td>
<td>2803</td>
</tr>
</tbody>
</table>
Section B
Answer 2 questions only

Question 1:
I/ What are the basic Program Execution Steps?
II/ Give brief notes about ASCII System.
III/ Give brief notes about optical storage media.
IV/ Give brief notes about: a- DMA b- Interrupt Handler. (20 marks).

Question 2:
Give brief account about:
   i- Internal Memory.
ii- Computing Environments characteristics.
iii- Data Forms.
iv- Algorithm.
v- Laser Printers. (20 marks).

**Question 3:**

I/ Give brief notes about general purpose registers.
II/ Give brief notes about : CLV, CAV?
III/ System performance is highly influenced by the width of Data & Address Busses. Discuss.
IV/ What is the role played by the processor register MDR? (20 marks).

*With best wishes*