Notes:
1. Answer your **four questions** only.
2. Do not use the **calculator** at all.
3. If you need to draw, you must be clear and orderly.

Q1: Define as following (choose SIX).
- a- ALU
- b- Operating System
- c- Software
- d- EAPROM
- e- CPU
- f- URL
- g- DRAM

(12.5 marks)

Q2: A- If C=10110, D=11000 find Result by *Adder logic circuit*.
B- Show difference between of *R-S flip flop, J-K flip flop*

(12.5 marks)

Q3: A- Represent numbers as following in (Choose THREE) BCD, Exceed 3 and Gray:
- (76)$_{10}$
- (FB)$_{16}$
- (73)$_{8}$
- (AB)$_{16}$
B- Represent number and sign in three methods on 8 bits (Choose THREE):
- (-80)$_{10}$
- (-CF)$_{16}$
- (+70)$_{8}$
- (-D)$_{16}$

(12.5 marks)

Q4: Simply logic function as following choose TWO only:
A- \[ F1 = \overline{A \oplus \overline{AC}} + \overline{B} \] \ [in Boolean Algebra]
B- \[ E(A,B,C,D) = \sum \{ 0,13,1,9 \} \text{ CD [in k-map OR Boolean Algebra]}
C- \[ F(A,B,C,D) = \sum \{ 0,13,11,3,8,6 \} \text{ [in k-map]}

(12.5 marks)

Q5: IF you have Table, answer to follow:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>line</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>L1</td>
</tr>
<tr>
<td>0</td>
<td>0</td>
<td>1</td>
<td>L2</td>
</tr>
<tr>
<td>0</td>
<td>1</td>
<td>0</td>
<td>L3</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>1</td>
<td>L6</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>0</td>
<td>L7</td>
</tr>
</tbody>
</table>

(A) Build Multiplexer in this table.
(B) Build Encoder in this table.

(12.5 marks)

*Good Luck and wishing to success*