

Mid 2016

### Question 1

1. (a) true
2. (c) Register indirect
3. (c) Large instruction set

4. (b) false



### Question 2

1. a.  $260 > 2^8$  then we need 9 bits for  
op code and 23 bits left for address

b.  $2^3 = 8$  8 MB  
mega byte ← 2 3

Minimum Signed binary number 1000 0000 0000 0000  
In hex → \$ 8000

2. a. `MOVE.B #6, D1`

$[D1] \leftarrow 6$

b. `ADD.W 70, D2`

$[D2] \leftarrow [D2] + [70]$

c. `MOVE.L (A1), D3`

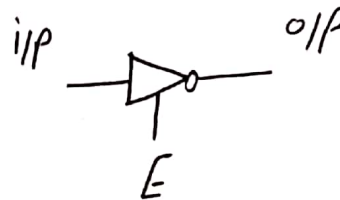
$[D3] \leftarrow [[A1]]$

---

### Question 3

1. tri state

lec 7 not included



2. Visible registers

- Data register
- Address register
- Status Register
- Program Counter

invisible register → IR (instruction register)

3.  $[05] \leftarrow [05] \times 2$

first byte  
of DS

3 A  $\rightarrow$

0011 / 010

0111 0100  $\swarrow$  ASL

$N = 0$        $msb = 0$  then number is positive in 2's complement

$\mathcal{L} = 0$  The value is not zero

$$V = 0$$

No overflow occurred

Why

multiplying +ve numbers gave +ve number

$C = 0$  the left bit shifted out is zero

ظننہں اُن آخر رقمین فی DS ہما 3A

أكيد الذكور صعب حاجة tricky عشان تعب ار plays

let first byte  
of DS

BA

$BA \rightarrow 1011 \ 1010, ASL$

0111 0100

$$N = 0, Z = 0$$

$N=0$ ,  $Z=0$   
 $V=1$  negative number multiplied by 2  
 $C=1$  gave +ve number

$$C = 1$$

Gave +Vc number

let first byte  
of DS

7A

7A  $\rightarrow$  0111 1010, ASL

1111 0100

$$N=1, Z=0$$
$$V=1, C=0$$

4.

64  $\rightarrow$  \$ 40

If [D1] = 0000F7D2

$\therefore [D1] =$  0012 03DF  
 Remainder Quotient

40  $\overline{) \begin{matrix} \text{HEX} \\ \text{03DF} \\ \text{F7D2} \\ \text{37D} \\ \text{3D2} \end{matrix}}$  Remainder = 12  $\uparrow$  HEX