

الحلول، النموذجية / أسئلة نهائية 2017
النموذج، الثاني من الأسئلة
معالج دقيق / د. إدريس باللات

Q1 :-

① Relative based addressing mode

$$PA = SBA * 10 + EA$$

$$= DS * 10 + BX + 4h = 4200h * 10 + 2004h$$

$$= 42000 + 204 = 42204h$$

② Indexed addressing mode

$$PA = DS * 10 + SI = 42000 + 400 = 42400h$$

③ Relative based Addressing mode

$$PA = SS * 10 + Bp + temp$$

$$= 00000 + 1000 + 245$$

$$= 01245h$$

④ Based - Indexed addressing mode

$$PA = SS * 10 + Bp + DI$$

$$= 00000 + 1000 + 300$$

$$= 01300h$$

⑤ Direct addressing mode

$$PA = DS * 10 + temp = 42000 + 245 \\ = 42245h$$

⑥ Relative Based Indexed addressing mode

$$PA = SS * 10 + BP + SI - 9h \\ = D0000 + 1000 + 3F7 - 9 \\ = D1000 + 3F7 \\ = D13F5h$$

⑦ Direct addressing mode

$$PA = DS * 10 + temp + 100h \\ = 42000 + 245 + 100 \\ = 42345h$$

⑧ Based addressing mode

$$PA = DS * 10 + BX \\ = 42000 + 200 = 42200h$$

⑨ Relative Indexed addressing mode

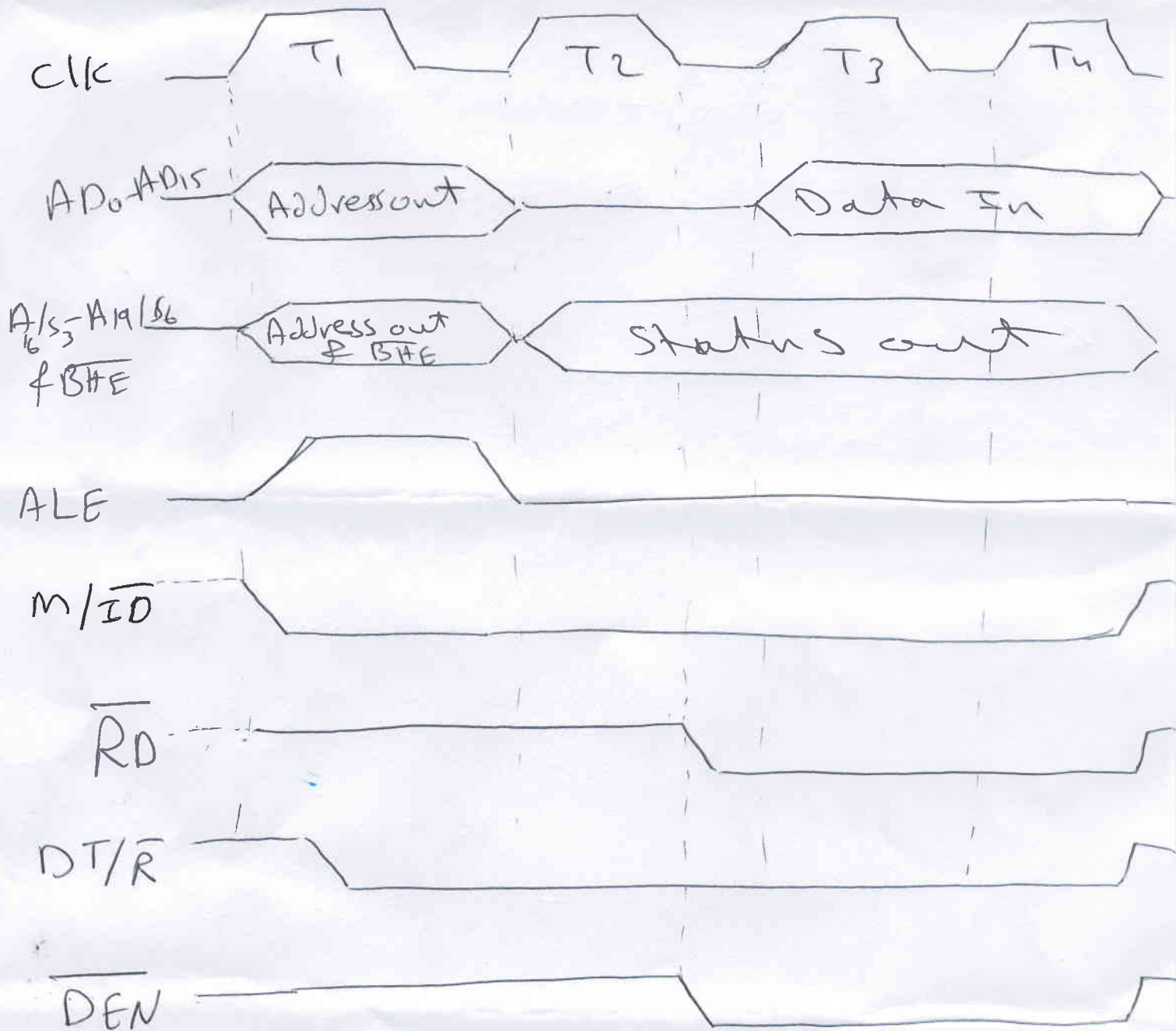
$$PA = \overset{or DS}{ES} * 10 + temp + DI \\ = 1A000 + 245 + 300 = 1A545h$$

⑩ Direct addressing mode

$$PA = DS \times 10 + 30Fh$$

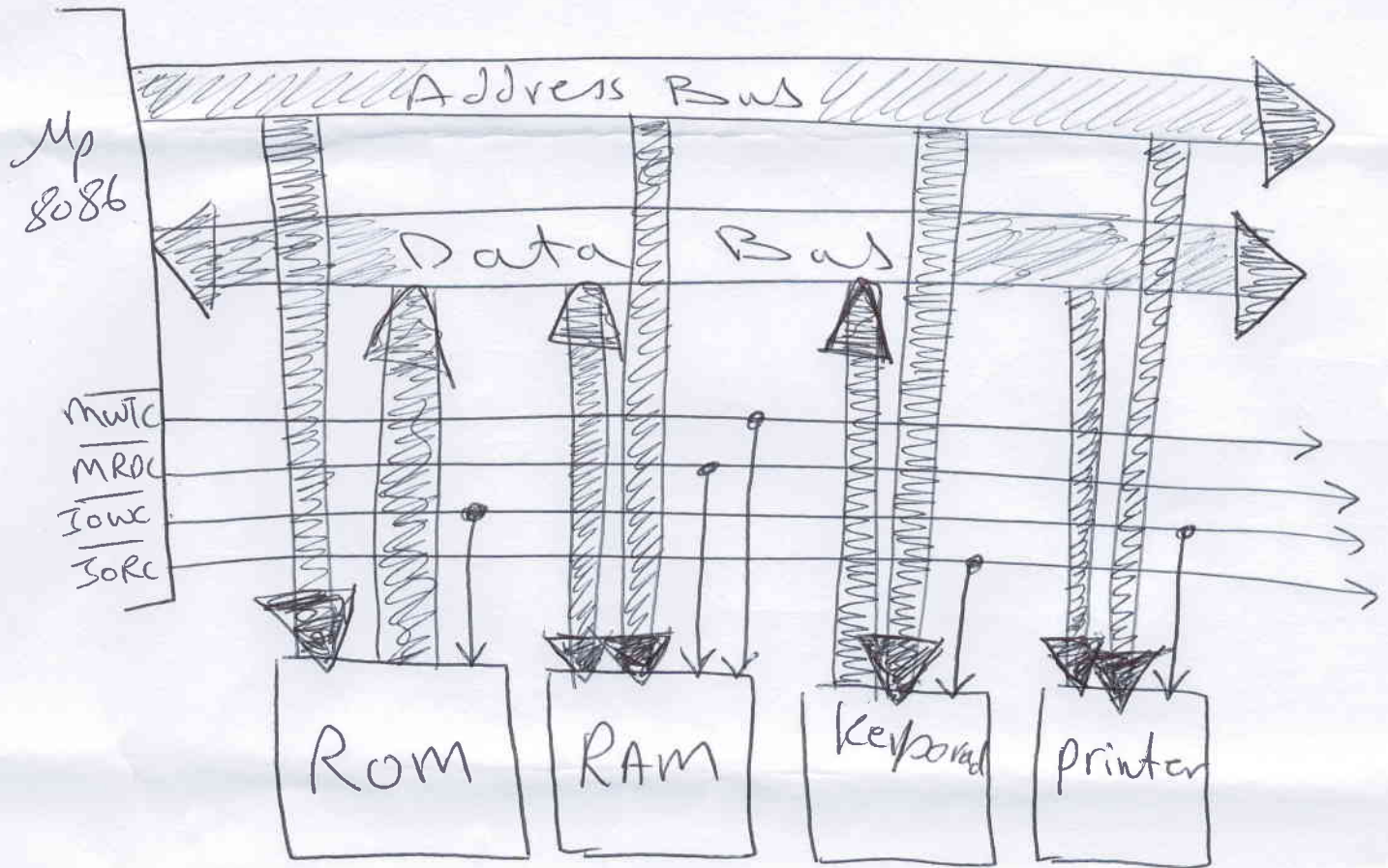
$$= 42000 + 30Fh = 4230Fh$$

$Q_2 - A :$



Q2-B

- ① Address Bus = unidirectional bus, 20-bit.
- ② Data Bus = bi-directional bus, 16-bit.
- ③ Control Bus.



Q2-C :-

- (i) $2^{11} \times 8 = 2K \times 8$ SRAM
- (ii) $2^{13} \times 16 = 2^3 \times 2^{10} \times 16 = 8K \times 16$ Rom
- (iii) $2^9 \times 4 = \frac{1}{2}K \times 4 = 512 \times 4$ DRAM
- (iv) $2^{16} \times 8 = 2^6 \times 2^{10} \times 8 = 64K \times 8$ Rom
- (v) $2^8 \times 2 = \frac{1}{4}K \times 2 = 256 \times 2$ DRAM

Q₃ : $10x - 5y + \frac{1}{4}(x+y)$

MOV SI, 100h

MOV AX, [SI]

MOV DI, AX

SHL AX, 01

MOV CX, AX

MOV AX, DI

SHL AX, 03

ADD AX, CX

INC SI

INC SI

MOV BX, [SI]

MOV DX, BX

SHL BX, 2

ADD BX, DX

SUB AX, BX

ADD DX, DI

SHR DX, 2



→
ADC AX, DX

MOV [400h], AX

HLT.

Qu-1 :-

- 1- External Hardware interrupt.
- 2- Non-maskable interrupt.
- 3- Software interrupt.
- 4- Internal interrupt.
- 5- Reset.

Qu-2 :- LES BX, [1E20h]

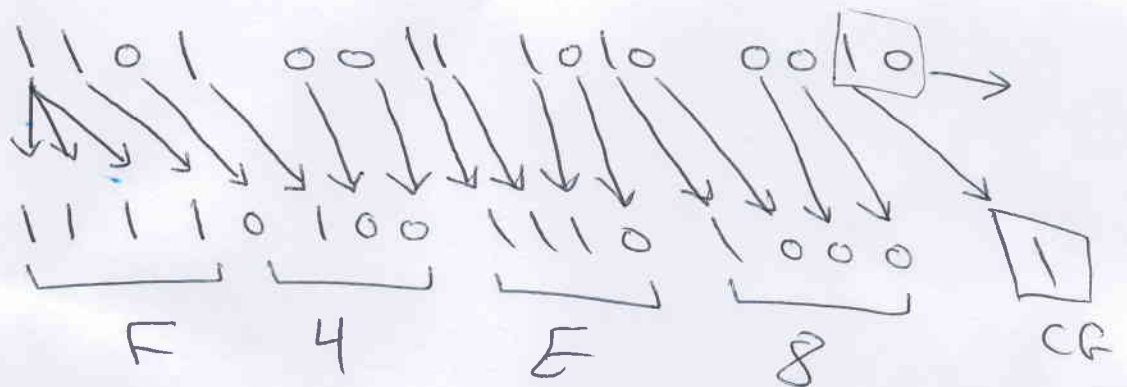
Qu-3 :- $T_{\text{cycle}} = 4T + 3T$

$$f = 10 \text{ MHz} \Rightarrow T = \frac{1}{f} = \frac{1}{10} \mu\text{sec.}$$

$$= 0.1 \mu\text{sec.} = 100 \text{ nsec.}$$

$$T_{\text{cycle}} = 4 \times 100 + 3 \times 100 \\ = 700 \text{ nsec.}$$

Qu-4 :-



$$(AX) = F4E8h$$

$$(CF) = 1$$

Q4-5:-

- 1- When the Queue register is empty (2-byte).
- 2- The BIU is not busy by reading or writing data.

Q5 :-

- 1- Maximum
- 2- 20-bit, 16-bit.
- 3- FFFFh
- 4- IP.
- 5- Euf BIU
- 6- Address.
- 7- Wait
- 8- group of lines that carry on information or data.

Q6 :-

```
MOV CX, 10h
MOV BX, CX
MOV SI, 400h
CLC
MOV AX, 00
# : AOC AX, [SI]
INC SI
```

```
} Loop#
  DIV BX
  MOV [250h], AX
  ALT
```