BLG 212E - FINAL EXAM ANSWERS

QUESTION 1) [25 points]

```
SIZE EQU  6
ARRAY RMB SIZE
  ORG ARRAY
  DAT 10,20,30,40,50,60

START
    LDA  SK, ARRAY          ;Get beginning address of ARRAY
    LDA  CD, 0              ;CD is loop counter
DEVAM
    LDA  A, <SK+CD+0>       ;Get next number from ARRAY
    LSL A                   ;Logical Shift Left (multiplies by 2)
    LSL A                   ;Logical Shift Left (multiplies by 2)
    STA A, <SK+CD+0>        ;Store result to ARRAY
    INC  CD                 ;Increment loop counter
    CMP  CD, SIZE           ;Compare with array size
    BLT  DEVAM              ;Goto loop
    INT
```

QUESTION 2) [20 points]

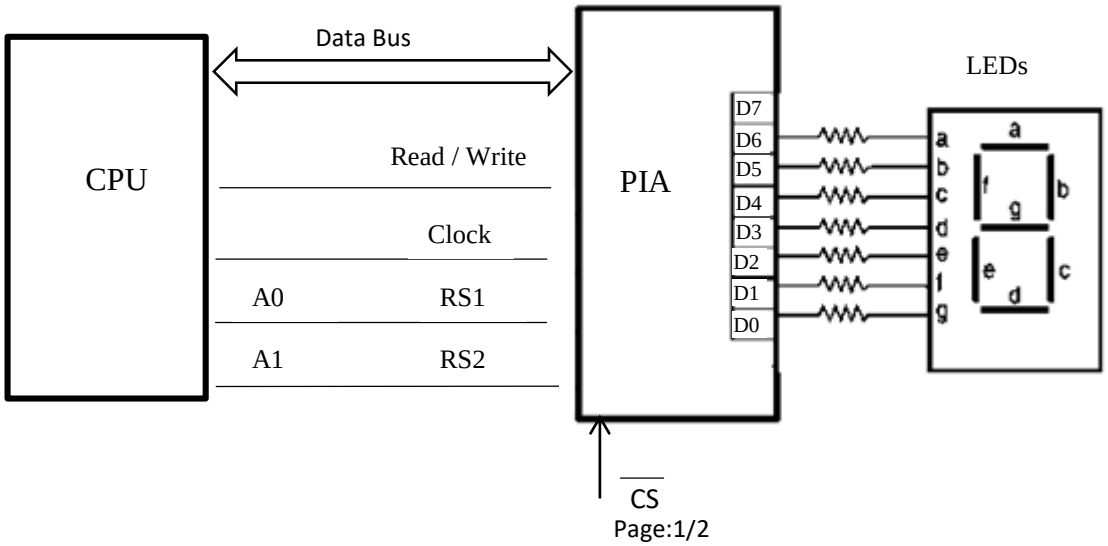
```
NUMBER    EQU  5          ;Loop limit symbol
FACTORIAL     RMB  2      ;Factorial variable

START
 STA  1, FACTORIAL        ;Initialize variable to 1
 LDA  C, 1                ;C register is loop counter

DEVAM
 MOV A, C                 ;Copy C counter to A
 MUL  A, <FACTORIAL>      ; Multiply A with factorial, result is in AB
 STA  AB, FACTORIAL       ;Store AB to factorial
 INC  C                   ;Increment loop counter
 CMP  C, NUMBER           ;Compare with loop limit
 BLO  DEVAM               ;Goto loop
 INT
```

QUESTION 3) [55 points]

a) [25 points]



b) [30 points]

```
START
          STA  $FF, <YÖNLEN.B>      ; All bits of PIA Port-B are output

INITIAL
*SK is used as an index on LED_CHAR_TABLE
*B is used as loop counter

     LDA SK, LED_CHAR_TABLE       ;Get beginning address of table
     LDA B, 0                     ;Initialize loop counter to 0

DEVAM
     LDA A, <SK+0>                ;Get corresponding LED character from Table
     STA   A,  <İSKELE.B>         ;Write to Port-B
     BSR WAIT                     ;Call wait subroutine
     INC B                        ;Increment loop counter
     INC SK                       ;Increment SK
     CMP B,10                     ;Compare to loop limit
     BLO DEVAM                    ;Goto inner loop

     BRA  INITIAL             ;Goto main loop

*----------------
WAIT   LDA CD,30000    ;CD is loop counter
DONGU   DEC CD         ;Decrement  counter
       CMP CD, 0       ;Compare with 0
       BNE DONGU       ;If not zero goto loop
       RTS             ;Return from subroutine
```