



School of Electronics Engineering

Winter Semester 2023-24 Continuous Assessment Test – I

Programme Name & Branch: B.Tech (School of Computer Science Engineering)

SLOT: C1+TC1

Course Name & Code: Microprocessors and Microcontrollers BECE204L

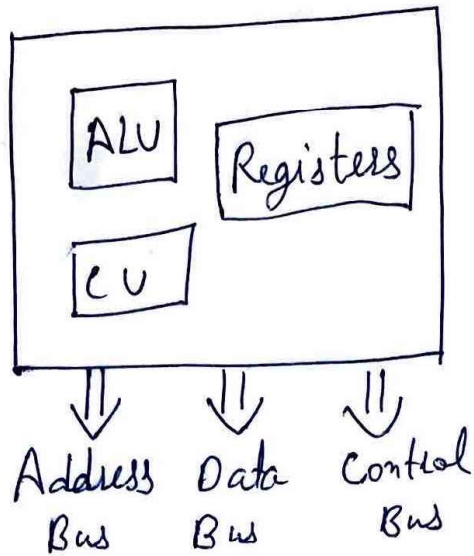
Exam Duration: 90 Min.

Maximum Marks: 50

Q. No.	Questions	Max Marks
1	i) Neatly draw the block diagram of a microprocessor and briefly explain about all the blocks and their operations.	05
	ii) Identify and rectify (if any) the errors for the following instructions: DIV A,B MOV TH0, #355 MOV A, @R3 MOVC A, @A+PC MOV R7,R8	05
2.	Write an 8051 assembly language program to transfer data from Rn where n=1, 2, 3 and 4 in register bank 1 to Rn where n = 3, 4, 5, and 6 in register bank 3 using stack operation. .	10
3.	Assume “your name” is stored in the code memory in hexadecimal number system. Write an 8051 assembly language program to transfer “your name” from code memory to data memory. Assume the source and destination address as required.	10
4	Write an 8051 assembly language program to get 8-bit number (x) from port P0. If x is odd number compute $y = x^2 + 5$ and if x is even number compute $y = x/2 + 2x$ . Transfer the value y to port P1. Note: The value of x is such that y does not exceed 8-bits.	10
5	Write an 8051 assembly language program to create a waveform with 33% duty cycle on P0.2. Provide necessary calculations. Use Timer	10

Q.1

(i)



(ii) (i) Div A, B → Div A B

MOV TH0, #355 → MOV TH0, # 8 bit data

MOV A, @R3 → incorrect only r0 and r1 can be used

MOVC A, @A+PC → Correct Instruction

MOV R7, R8 → INVALID Instruction

MOV R7, A

There is no any register as R8

Q.2 ①  
↓  
↓  
↓  
↓  
↓

SETB PSW.3

MOV R1, #10

MOV R2, #20

MOV R3, #30

MOV R4, #40

{ MOV SP, #20H

{ PUSH 09

3 { PUSH 0A

{ PUSH 0B

{ PUSH 0C

3 { POP 1B

{ POP 1C

{ POP 1D

{ POP 1E

END

Q.3

```
ORG 00H  
MOV DPTR, #200H  
MOV R0, #40H  
MOV R1, #6
```

3

Loop: CLR A

```
MOV A, @A+DPTR  
MOV @R0, A  
INC DPTR  
INC R0  
DJNZ R1, Loop
```

5

```
ORG 200H  
DB "SHELJA"
```

2

END

Q.4

ORG 00H

```
1 [ MOV A, #0FFH
   MOV P0, A ] } Make as I/p Port
```

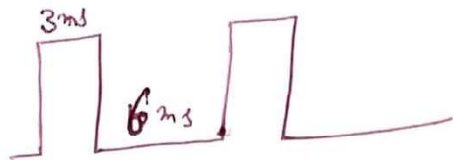
```
LOOP: [ MOV A, P0 ] } Take I/p 'x' from P0
       [ RRC A
         JNC L1 ] } If carry = 0, x is even and
                   } jump to L1
```

```
3 [ MOV A, P0
   MOV B, A
   MUL AB
   ADD A, #5
   MOV P1, A ] } If x is odd
                  }  $y = x^2 + 5$ 
```

```
L1: [ MOV A, P0
     MOV B, #2
     DIV A, B
     MOV R0, A
     MOV A, P0
     MOV B, #2
     MUL AB
     ADD A, R0
     MOV P1, A ] } If x is even
                  }  $y = x/2 + 2x$ 
```

```
1 [ SJMP LOOP ] } Do it continuously
   END
```

Q5 For ON Time:



$XTAL = 11.0592 MHz$

$1MC = 1.085 \mu s$

$\frac{3ms}{1.085\mu s} = 2764.9$   
 $\approx 2765$

$65536 - 2765$

$= 62771$

$= \underline{F533H}$

$\frac{96ms}{1.085\mu s} = 5529.9$   
 $\approx 5530$

$65536 - 5530$

$= 60006$

$= \underline{EA66H}$

ORG 00H

MOV TMOD, #01H

H: MOV TH0, #0F5H

MOV TLO, #33H

SETB P0.2

ACALL DELAY

MOV TH0, #0EAH

MOV TLO, #66H

CLR P0.2

ACALL DELAY  
 SJMP H

DELAY:

SETB TRO

K: JNB TFO, K

CLR TRO

CLR TFO

RET

END

4

3