



আন্তর্জাতিক ইসলামী বিশ্ববিদ্যালয় চট্টগ্রাম
الجامعة العالمية الإسلامية - بنغلاديش
International Islamic University Chittagong

SL. No. 24 (B)

071508

ANSWER SCRIPT

08 JUN 2024

Dept. of Electronic &
Telecommunications Engineering

09 JUN 2024

Dept. of Electronic &
Telecommunications Engineering

Question No.	Marks Allocated	Marks Obtained	Remarks
1		2.5 + 5	
2		4 + 3	
3			
4			
5			
6			
7			
8			
9			
10			
Total		14.5	

Signature of Examiner

Matric/ID No. : T221001 ID No. (In Words) : T-two-two-one-zero-zero-one

Semester : Spring. Summer Autumn. Section : A.....Academic Year : 20 24 Mid-Term Exam. Final Exam.

Program : BSC. in ETE Semester Enrolled : 5th

Course Title : Microprocessor and Peripherals

Course Code : ETE - 3543 Date of Exam : 09/06/2024

No.	Serial Number of Additional Answer Script	Signature of Invigilator
1		
2		
3		
4		
5		
6		

Ans To The Q:- No - 1(a)

Subroutine : Subroutines are a part of ^a program which can be re-executed by the programmer. It performs tasks such as; numerical calculation, interrupt operations etc.

Execution of a sub-routine example :-

```
MVI B,00H;           → SUB:  
MVI C,01H;           MOV A,B;  
CALL SUB             MOV B,C;  
:                   ADD D;  
RET;
```

Here, We introduced two registers ; which loaded value '00H' & '01H' will be stored into the accumulator before calling the subroutine.

After calling the subroutine the main subroutine operation will be started. After the operation we will write 'RET' instruction which

will again go back to the subroutine.

After that, we will use 'HLT' instruction to * halt the program.

By using this process we can execute a subroutine very easily.

Ans To The Q:- No - 1(b)

RET instruction :- RET instruction pops the address from the stack and jumps into the address.

POP instruction :- POP instruction retrieves

the data from the stack and increments stack pointer.

Clearly, we can see that both the POP and RET instruction retrieves data from the stack. But we use RET for the

task like; stack overflow of the stack. And we use POP instruction for general problems handling.

using a stack :-

Program:

LXI D, 1200H;

PUSH D ;

CALL SUB

ADD B;

HLT;

SUB:

POP H;

POP B;

PCHL;

RET ;

Ans To The Q:- No - 2(a)

Difference between a JMP instruction and CALL instruction :-

JMP Instruction	CALL instruction
1) JMP is executed because it can unconditionally jump into the program.	1) CALL is executed to call the subroutine.
2) Does not make any difference onto the stack.	2) Does make difference onto the stack.
3) JMP is executed to jump into the program. It will continue until we find the instruction JNZ in loop operation of the program.	3) CALL instruction stores the address of the next instruction on to the stack before jumping to the subroutine.

* program to find the sum of the first 10 natural numbers :-

Program:

MVI C, 0AH; ✓

MVI B, 00H; ✓

MVI D, 01H; ✓

SUM LOOP :

ADD D; ✓

MOV A,B;

INX D;

DCR C;

JNZ SUM LOOP;

RET;



Ans To The Q:- No - 2 (b)

*Program to count from 0 to C with two second delay between each count :-

Program:

MVI B, 00H ;

MOV A, B ;

Loop: LXI H, count ;

DCX H ;

MOV A, L ;

ORA H ;

JNZ Loop ;

outside Loop:

INR B ;

MOV A, B ;

CPI OAH ;

JNZ DISPLAY ;

JMP RESET ;

RET ;

10T

10T

10T

6T

4T

4T

10T/7T

4T

4T

7T

10T/7T

Given,

$$\text{Time Delay, } T_D = \underline{\underline{2 \text{ sec}}}.$$

$$\text{clock frequency, } T = 4 \text{ MHz}$$

$$= 4 \times 10^{-6} \text{ sec.}$$

$$\text{Inside Loop, } N_T = \underline{\underline{24T}}$$

$$\text{Outside Loop, } M_T = \underline{\underline{45T}}.$$

$$\underline{T_D = M_T + [(count)_{10} \times N_T] - 3T}$$

3

So,

$$2 \text{ sec} = 45T + [(count)_{10} \times 24T]$$

$$\text{or, } count_{10} = \frac{2 - 45 \times 4 \times 10^{-6}}{24 \times 9 \times 10^{-6}}$$

$$\text{or, } count_{10} = 20851$$

$$\therefore count = 515F.$$

(Ans.)

PART-A



আন্তর্জাতিক ইসলামী বিশ্ববিদ্যালয় চট্টগ্রাম
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International Islamic University Chittagong

SL. No. 24 (B)

071509

ANSWER SCRIPT



08 JUN 2024

Dept. of Electronic &

Telecommunications Engineering

09 JUN 2024

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Question No.	Marks Allocated	Marks Obtained	Remarks
1		4 + 3.5	
2		1.5 + 0	
3		1	
4			
5			
6			
7			
8			
9			
10			
Total		9	

Signature of Examiner

Matric/ID No. : T221008 ID No. (In Words) : T-Two - Two - One - zero - zero - Eight

Semester : Spring. Summer Autumn. Section A.....

Academic Year : 20.24 Mid-Term Exam. Final Exam.

Program : BSc in ETE Semester Enrolled : 5th.....

Course Title : Microprocessor Peripherals.....

Course Code : ETE-3543 Date of Exam : 9-6-2024

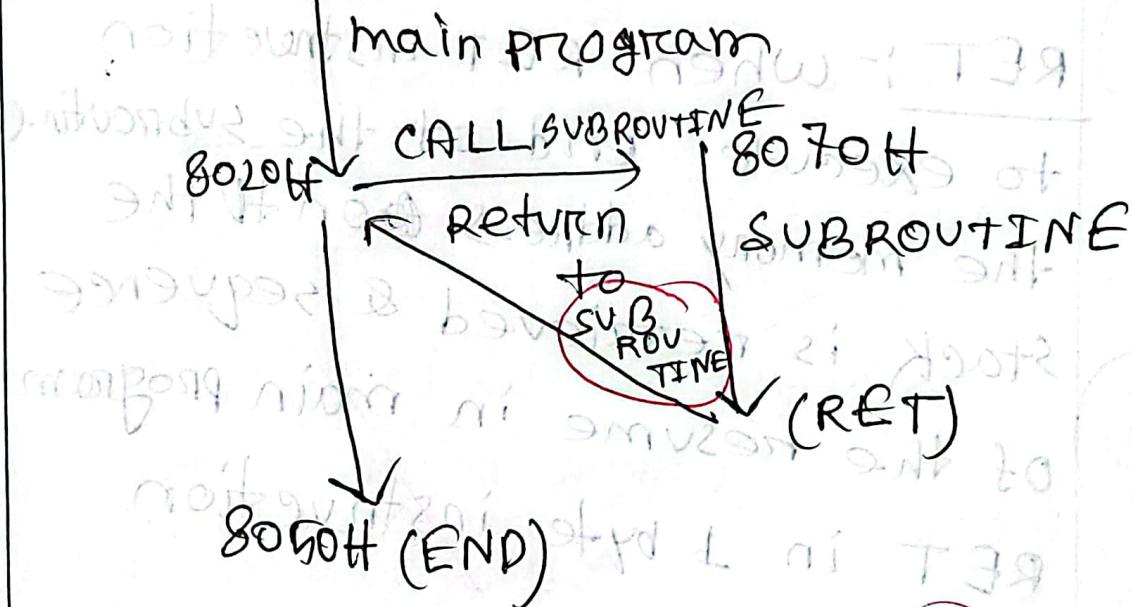
Signature of Invigilator with date

No.	Serial Number of Additional Answer Script	Signature of Invigilator
1		
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Ans. to the Que. No. 1(a)

Subroutine - subroutine are the part of a program which can be reexecuted by the programmer. subroutine perform task are used to the regularly by the program & the use numerical calculation

⇒ 8000H (Start)



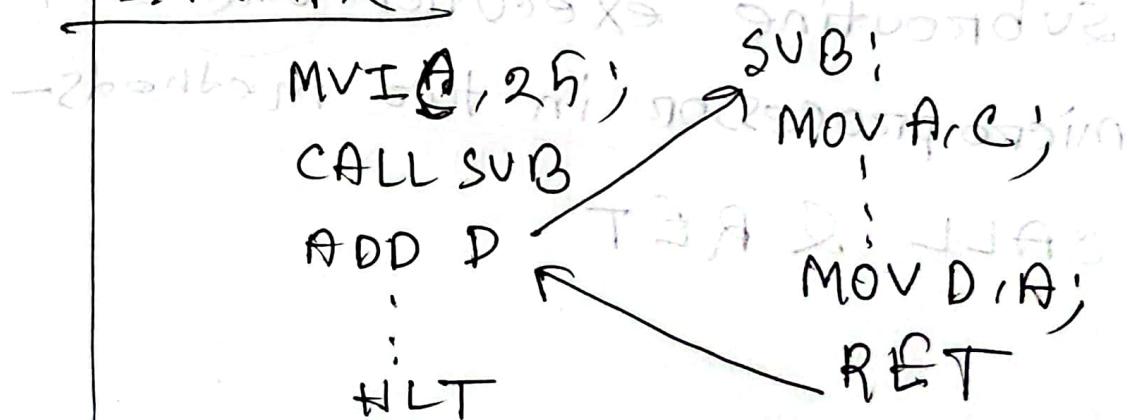
Subroutine execution are 8085 microprocessor in two methods -

CALL & RET

CALL - When a called subroutine the content of the program counter, which the address ??? instruction following the CALL instruction to stored into the stack & transferred to the program address, CALL [16 bit address] - 3 byte instruction

(4) RET :- when RET instruction to execute end of the subroutine the memory address, ~~point~~ the stack is retrieved & sequence of the resume in main program, RET in 1 byte

Example



Ans. to the Que. No. 1(b)

~~RETO Increment the stack pointer~~

~~2003 Pseudocode QMC~~

~~not sufficient~~

~~JJAO~~

~~QMC~~

~~Stackframe~~

~~and bit strip~~

~~show pictures~~

~~JJAO suffA~~

~~BBB QMC suffA~~

~~Suff A~~

~~different suffixes~~

~~not enough numbers~~

~~not enough~~

~~P-to-pairs~~

~~P-to-pairs~~

~~different mapping~~

~~different mapping~~

~~different sort of pairs~~

~~different sort of pairs~~

~~2i additional~~

~~2i additional~~

~~to handle for~~

~~from to long~~

~~differentiations~~

~~differentiations~~

Ans. to the Que. No. 2 (a)

Explain the difference between
JMP instruction & CALL
instruction

JMP	CALL
Immediate register	Immediate register + indirect addressing mode
After JMP there are no instruction	After CALL there are return instruction
counter of a program transfer to the memory location is the part of main program	counter of a program transfer to the memory location is not part of a main program

10T state is required to the instruction

3-cycle required to the instruction

202

Transfer value aren't on to the stack

18T state is required to the instruction
???

5-cycle required to the instruction

Transfer value on to stack

→ find the sum of the first 10 natural numbers -

MVI C, 0A H ;

MVI B, 00 H ;

MVI D, 01 H ;

0.5

SUMLOOP:

ADD D ;

MOV B,A ;

INX D ;

DCR C ;

JN2 SUM_LOOP;

→ value in the B-register

Ans. to. the. Que. No. 2(b)

Next:

MVI B, 00H ; -10

MVI A, B

DELAY:

LXI H, -10

DEC H ; -6

MOVA, L ; -4

ORA H ; -4

JNZ LOOP ; -10

outsider LOOP:

INR B ; -9

MOVA, B ; =9

CPI OA H ; -7

JNZ DISPLAY ; =10

JMP NEXT ;

RET ;

$$fd = 0.053 \times 10^{-6} \quad f_{free} = 4 \text{ MHz}$$

$$= 4 \times 10^{-6}$$

$$IS = 24T + 45T$$

(count)_d

$$IS = 24 \times 4 \times 10^{-6} + \text{count}_d + 45 \times 4 \times 10^{-6}$$

$$\text{count}_{12} = \frac{2 - 45 \times 4 \times 10^{-6}}{24 \times 4 \times 10^{-6}}$$

$$= 1044$$

We know that,

Hexadecimal from decimal

$$C = 12$$

Referred decimal point

Octal and decimal

Hex pointer

Binary on condition

Transfer to decimal

Conversion

From Sint. Point to 9096

Count down

Ans. to the Que. No. 1 (b)

RET Instruction :- Using the subroutine flow.
when RET instruction execute
the end of program subroutine
in the memory address on
to the stack retrieved &
sequence resume to the main
program. Ex - RET

POP Instruction - Increment

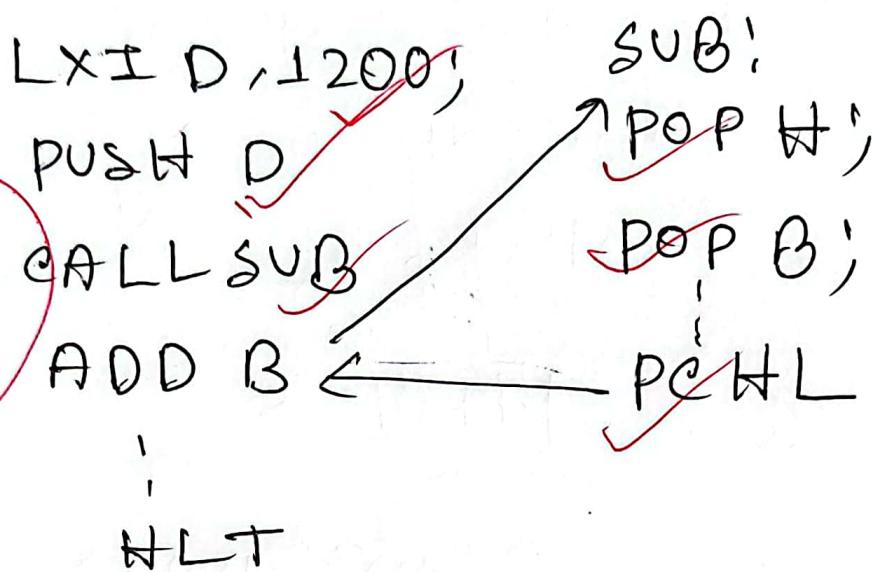
~~The stack pointer~~

Retrieved data from the
stack and decrement the
stack pointer. Ex POP H;

- there are no condition
- a segment or a memory location
- POP are using the normal general form,

~~Ans Go - the que. no. 1 (b)~~

- pass the parameter to the subroutine using a stack -



- passing parameter are define some main value pass to the subroutine. There are using stack.
- fixed the passing parameter.

PART-A



আন্তর্জাতিক ইসলামী বিশ্ববিদ্যালয় চট্টগ্রাম
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Question No.	Marks Allocated	Marks Obtained	Remarks
1		1.5 + 0.5	
2		0.5 + 0	
3			
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Total		2.5	

Signature of Examiner

Matric/ID No. : T-221020 ID No. (In Words) : T-two-two-zero-zero-zero-zero

Semester : Spring. Summer Autumn. Section : A

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Program : BSC in ETE Semester Enrolled : 5th

Course Title : microprocessor And peripherals.

Course Code : E.T.E.-3543 Date of Exam : 09-06-2024

W.H. 1/14
 Signature of Invigilator with date

No.	Serial Number of Additional Answer Script	Signature of Invigilator
1		
2		
3		
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Ans to the Ques no: 01 (a)

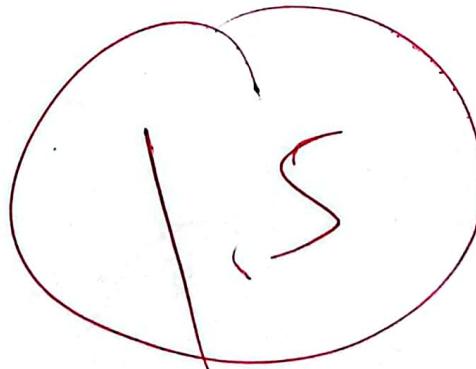
Ans subroutine is a function that uses
storing the Data and retrieve a later.

When the programmer uses subroutine,
to pass the parameter before calling
the sub-routine to push the stack.

Example:

~~MOV B, 05H;~~ SUB:
~~MUL B, 05H;~~ PROG B, A
~~ADD B,~~ ADD B
~~CALL SUB~~ RET

~~HLT~~



Ans to the question (b)

Ans RET → RET is return the \oplus program. The program parameter using the function or the value of execute subroutine in the stack.

POP: POP is the instruction is the give the function of the stack. gt is the instruction working the value of program popped. The function call the sub-routine of the stack.

Answer to the que no. 1(b)

Ans To pass the parameters to the sub-routine.

program:

LXI
DCR

CALL SUB

program:

LXI

DCR

ADD B

CALL SUB

RET, POP B

PUSH D

RET

PC HAL

RET

another 1

MVI A, 009 H;

MVI B

LXI 2005 H,

CALL SUB

sub : MVI B,A

ADD B

RET

Ans to the Ques 2 (a)

Ans (i) JMP instructions are when we take a value and it stores the memory address there when it over the (ii) instruction JMP work.

on the other hand, when need a function the CALL instruction use.

Example: CALL → sub-routine.

JMP is use for go on the another condition. on the other hand, call is used for the calling sub-routine and various function.

Ans to the que no. 2(b)

LXI H ;
DCX H ;
MOV AL ;
ORA H ;
JNZ Loop ;

~~CLR DDINR~~ ;

MOV A,B

CB= OA H ;