ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE – 2009
MICROPROCESSORS & MICROCONTROLLERS
SEMESTER – 4

Time : 3 Hours] [Full Marks : 70

GROUP – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the following : 10 × 1 = 10

i) Which one of the following is the non-vectored interrupt of 8085 A microprocessor ?

a) RST 7·5 b) EI

c) INTR d) TRAP. ☐

ii) The number of programmable 8-bit register of 8085 microprocessor is

a) 5 b) 6

c) 7 d) 8. ☐

iii) The content of 'HL' register pair is 204 A H. What will be the content of after executing the instruction DAD H.

a) 204 A H b) 4096 H

c) 4094 H d) 2096 H. ☐

iv) Whenever the Pop instruction is executed, the stack pointer is

a) decremented by 1 b) decremented by 2

c) incremented by 1 d) incremented by 2. ☐

v) When the instruction LHLD is executed, number of T-states required are

a) 10 b) 14

c) 13 d) 15. ☐

vi) In 8254 Mode 2 is used for

a) rate generator

b) interrupt on terminal count

c) hardware-retriggerable one shot

d) none of these.

vii) Address lines requires for 32 K-byte memory chip is

a) 13 b) 14

c) 15 d) 16.

viii) Machine cycles in "CALL" instruction are

a) 6 b) 5

c) 4 d) 3.

ix) The number of I/O ports available in 8051 are

a) 4 b) 3

c) 2 d) 5.

x) XCHG instruction is used to

a) exchange between H and L registers

b) exchange between D and E registers

c) exchange between HL and DE register pair

d) exchange between BC and DE register pair.

xi) What is the BSR control word to set PC_4 ?

a) 09 b) 07

c) 04 d) 05.

xii) Whenever the PUSH instruction is executed, the stack pointer is

a) decremented by 1 b) decremented by 2

c) incremented by 1 d) incremented by 2.

xiii) Which instruction uses auxiliary carry flag ?

a) XTHL b) CMA

c) DAA d) SPHL.

xiv) In 8051, how many bytes are present in on chip RAM ?

a) 128 b) 64

c) 4000 d) 256.

xv) In 8051, RS0 = 1 and RS1 = 0. Which bank is selected ?

a) Bank 3 b) Bank 1

c) Bank 2 d) Bank 0.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following questions. 3 × 5 = 15

2. Specify the register contents and the flag status as the following instructions are executed.

Initially :	A	B	S	Z	CY
	XX	XX	X	X	X

SUB A

MOV B, A

DCR B

INR B

SUI 01H

HLT.

5

3. a) Explain the de-multiplexing process of the bus AD_0–AD_7. 4

b) Why are program counter and stack pointer 16-bit registers ? 1

4. a) Explain in detail what happens when the instruction "CALL 16-bit address" is executed. 4

b) Write down the instruction which uses Auxiliary Carry Flag. 1

5. a) Explain the function of the following pins of 8085 :

READY, INTR 2

b) Discuss the functions of the following instructions of 8085 :

ADC H, LHLD 8000 3

6. Write an assembly language program to store 55H in R1 of Register Bank 3 of 8051. 5

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following questions. 3 × 15 = 45

7. a) Write an ALP to find the sum of a series of 8-bit numbers, sum may be of 16-bits. 6

b) Explain the sequence of events that takes place when the PUSH & POP instructions are executed. Illustrate the operation of stack instructions with suitable examples. 4

c) Write an 8085 ALP to disassemble a byte into nibble & store result in consecutive memory location. 5

8. a) In how many models can 8255 operate ? Explain them. 4

b) Show the control word format for I/O mode operation of PPI 8255. 2

c) In mode 1, what are the control signals when port *A* & port *B* act as outputs ports. Discuss the control signals. 3

d) Discuss the different modes in which 8254 can operate. 6

9. a) Discuss the internal structure of 8051 microcontroller. 8

b) Explain the PSW bits, TMOD bits & TCON bits of 8051 microcontroller. 7

10. a) What are interrupts ? What is meant by the 'Priority' of an interrupt ? Explain with example. What are RIM and SIM instruction ?

b) The following block of data is stored in the memory locations from XX55H to XX5AH. Write a program to transfer the data to the locations XX80H to XX85H in the reverse order and also store the counts of even and odd numbers in the memory locations XX86H and XX87H repectively.

Data (H) = 49, A2, 15, 78, 1B, 59 2 + 1 + 1 + 1 + (5 + 5)

11. Write short notes on any *three* of the following : 3 × 5

a) Polling

b) 8051 micro-controller configuration

c) Interfacing 8-bit ADC with 8085 using status check scheme

d) IEEE 488 Bus & RS 232 C standard.

e) Addressing modes of 8085 CPU.

END