

Total No. of Questions—8]

[Total No. of Printed Pages—4

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[4657]-540

S.E. (Electrical) (II Sem.) EXAMINATION, 2014

FUNDAMENTALS OF MICROPROCESSOR AND MICROCONTROLLER

(2012 PATTERN)

Time : Two Hours

Maximum Marks : 50

N.B. :- (i) Attempt Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4,
Q. No. 5 or Q. No. 6, Q. No. 7 or Q. No. 8.

(ii) Neat diagrams must be drawn wherever necessary.

(iii) Figures to the right indicate full marks.

(iv) Assume suitable data, if necessary.

1. (a) Write a program to add two numbers stored in locations D000H and D001H. Store the result in location D002H location and status of carry flag in a location D003H. [5]

(b) Explain Direct and Register Indirect addressing mode in 8085. [4]

(c) Explain the functions of program counter and instruction register. [4]

P.T.O.

Or

2. (a) Explain the following instructions in detail : [5]
(i) MOV A, M
(ii) LXI H, D000H
- (b) Explain the following interrupts of 8085 : [4]
TRAP
RST1
- (c) Explain the function of stack pointer and give an instruction to initialize stack pointer. [4]
3. (a) DAC 0808 is interfaced with microprocessor 8085 through port A of 8255. Assuming the address of port A as 80H, write a program for generation of sawtooth wave form at the output of DAC. [4]
- (b) Draw the control word register of 8254. [4]
- (c) Draw a neat diagram of the internal RAM structure of 8051. [4]

Or

4. (a) Explain the functions of the following pins of ADC 0809 : [4]
(i) SOC
(ii) EOC.
- (b) Draw the TCON. Explain the functions of each bit in the register. [4]
- (c) Draw the control word register of 8255. [4]

5. (a) On Reset the following instructions were executed : [5]

MOV A, # 98H

ANL A, # 0FH

ADD A, # 08H

Draw the program status word and give the status of flag register after execution of the above instructions.

(b) Explain the following instructions : [4]

(i) MOV DPTR, # 1200H

(ii) MOV A, @Ri

(c) Explain the steps taken by 8051 in response to an interrupt. [4]

Or

6. (a) Explain the following instructions : [4]

MOVX @ DPTR, A

ANL A, # data

(b) Write an assembly language program to copy the contents of memory location D000H from external program memory to a location D001 in external data memory and to register R0 of bank 0. [5]

(c) Explain steps to be followed to receive data serially in 8051. [4]

7. (a) Write the assembly program to rotate the stepper motor in anticlockwise direction through an angle of 180 degrees. The stepper motor is controlled through the least significant 4 pins of Port 1 of 8051 microcontroller. [8]

Assume :

- (i) The step angle to be 1.8 degrees.
(ii) Delay to be already written at suitable location.
(iii) The step sequence is as given below :

Step	A	B	C	D	
1	0	1	0	1	
2	1	0	0	1	↓ Anticlockwise direction
3	1	0	1	0	
4	0	1	1	0	

- (b) Explain with a block diagram of measurement of power factor using 8085. [4]

Or

8. (a) Draw the interfacing diagram. Explain the measurement of temperature using 8051. [8]
- (b) Explain with a block diagram of measurement of energy using 8085. [4]