

Time: 3 Hours

DECEMBER 2013

Max. Marks: 100

PLEASE WRITE YOUR ROLL NO. AT THE SPACE PROVIDED ON EACH PAGE IMMEDIATELY AFTER RECEIVING THE QUESTION PAPER.

NOTE: There are 9 Questions in all.

- Question 1 is compulsory and carries 20 marks. Answer to Q.1 must be written in the space provided for it in the answer book supplied and nowhere else.
- The answer sheet for the Q.1 will be collected by the invigilator after 45 minutes of the commencement of the examination.
- Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks.
- Any required data not explicitly given, may be suitably assumed and stated.

Q.1 Choose the correct or the best alternative in the following: (2×10)

- a. When numbers(+5) and (-3) represented in 4-bit signed magnitude are added the result is

(A) 1110 (B) 0010
(C) 0000 (D) 1010

- b. When control unit of 8085 processor sends out logic 0 on both \overline{RD} and \overline{WR} pins simultaneously; it means__

(A) 8085 control unit is busy with internal processing.
(B) Control unit is not interested in reading/writing any data.
(C) The microprocessor has gone bad and needs to be discarded.
(D) Both (A) & (B).

- c. Which flag gets affected when result of DAD instruction is more than 16 bits?

(A) P (B) Z
(C) CY (D) S

- d. Which of the following is raising edge triggered interrupt in 8085

(A) RST6.5 (B) RST5.5
(C) RST7.5 (D) INTR

- e. ____ is the non-maskable interrupt in 8086

(A) RST5.5 (B) RST7.5
(C) TRAP (D) RST6.5

- f. In 8051 has three general purpose flags that are user programmable .Of these one is saved in PSW & other two are saved in
- (A) ALU (B) Stack pointer
(C) PCON register (D) DPTR
- g. The value of LSB for 8-bit DAC operating in 0V-10V range is
- (A) 5V (B) 1V
(C) 39mV (D) 0.1V
- h. Which of the following is not a feature of 8051 microcontroller
- (A) Full duplex serial data transmitter/receiver
(B) Four Register banks
(C) Four 16-bit timer/counters
(D) On chip oscillator Clock circuits
- i. When a subroutine is called, the address of the instruction following the CALL instruction is stored in/on the____
- (A) Instruction pointer (B) Accumulator
(C) Stack (D) Program Counter
- j. When instruction SUB A is executed the status of Z and CY Flag will be____
- (A) CY=1;Z=1 (B) CY=0;Z=0
(C) CY=0;Z=1 (D) CY=1;Z=0

Answer any FIVE Questions out of EIGHT Questions.
Each question carries 16 marks.

- Q.2** a. In a microprocessor, what is the use of a register? What are the advantages & disadvantages of using registers over a memory location?
What is the speciality of register A (accumulator) over other general purpose registers in 8085? (8)
- b. Explain the pin diagram of 8085 with description. (8)
- Q.3** a. Explain the instructions using example: (8)
- (i) PC (ii) CM
(iii) IR (iv) CNC
- b. What is the need for input output ports in microcomputer systems? Discuss merits and demerits of input-output mapped with respect to memory mapped input-output in 8085. (8)

- Q.4** a. Write an assembly language program to multiply two one byte binary numbers stored at locations X and Y. Display the 16 bit result in the address field. (8)
- b. Write an 8085 assembly language program to find the HCF of two 8 bit numbers. The numbers are stored at location X & Y. Display the numbers in the address field, and their HCF in the data field. (8)
- Q.5** a. What is the need for masking and interrupt? Discuss SIM and RIM instruction in 8085. (8)
- b. Explain the mode definition control word of 8255. Configure port A and port B as input port and port C as output port when 8255 is connected as I/O mapped I/O (mode 0). What will be the mode definition control word? (8)
- Q.6** a. Explain keyboard & display mode set command of 8279. (8)
- b. Write an 8085 assembly language program to implement a decimal counter using logic controller interface. The starting count should be accepted from interface and displayed on the interface. (8)
- Q.7** a. Explain the overview of 8259? Discuss various registers available in Intel 8259 –programmable interrupt controller. (8)
- b. Describe the functionality of following pins available in DMA controller- 8257
- | | |
|-------------|-----------------------|
| (i) Reset | (ii) \overline{IOW} |
| (iii) HRQ | (iv) HLDA |
| (v) TC | (vi) \overline{MR} |
| (vii) ADSTB | (viii) AEN |
- (8)
- Q.8** a. Discuss the interpretation of the bits of the control port of 8253. (8)
- b. Specify the mode word format required to initialize 8251 in desired mode for following conditions:
- (i) Asynchronous mode; Baud Rate x 1; 8 bit/character; even parity; one stop bit.
- (ii) Synchronous mode; 5 character length, even parity; internal sync detection; Single sync character. (8)
- Q.9** a. Explain the functional pin diagram of 8051 with a neat diagram. (8)
- b. Mention exactly what happens (which operation takes place) when following 8051 instruction is executed and identify its addressing mode: (4)
- | | |
|-----------------|-------------------|
| (i) ORL A, 50H | (iii) SUBB A, 45H |
| (ii) ADD A, 20H | (iv) ANL A @ Ri |
- c. Mention the various types of instructions available for 8051, with examples. (4)