

# 17534

**21819**

**3 Hours / 100 Marks**

Seat No.

--	--	--	--	--	--	--	--

- Instructions* –
- (1) All Questions are *Compulsory*.
  - (2) Answer each next main Question on a new page.
  - (3) Illustrate your answers with neat sketches wherever necessary.
  - (4) Figures to the right indicate full marks.
  - (5) Assume suitable data, if necessary.
  - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
  - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

1. a) **Attempt any THREE of the following:** **12**
  - (i) Draw block diagram of microcontroller.
  - (ii) List different types of buses with their size in 8051  $\mu$ c.
  - (iii) Why 8051 is known as boolean processor?
  - (iv) Explain any four assembler directive with examples.
  - (v) Compare linear and absolute decoding techniques.
  
- b) **Attempt any ONE of the following:** **6**
  - (i) Write an ALP to find smallest number from given array of 10 bytes in internal RAM 40h onwards.
  - (ii) Interface 4-digit, 7-segment display (CA) with 8051  $\mu$ c.

P.T.O.

- 2. Attempt any FOUR of the following:** **16**
- a) Draw the structure of internal Ram of 8051  $\mu$ c.
  - b) List any eight features of 8051  $\mu$ c.
  - c) Explain power saving modes of 8051  $\mu$ c.
  - d) Draw the pin diagram of 8051  $\mu$ c.
  - e) Compare 8031, 8032, 8051, 8052, 8751, 8752 and 89C51.
  - f) Compare microprocessor and microcontroller (any eight points).
- 3. Attempt any FOUR of the following:** **16**
- a) Write addressing modes for following instructions:
    - (i) ADD A, RO
    - (ii) ADD A, #20h
    - (iii) ADD A, 50h
    - (iv) ADD A, @RO.
  - b) Explain the following instructions:
    - (i) MOVC A, @ A+DPTR
    - (ii) RRC A
    - (iii) SWAP A
    - (iv) XCHD A, @RO
  - c) What is content of A after execution of following program:  
CLR A  
CPL A  
ANL A , # Coh  
RR A
  - d) Write an ALP to add array of 10 bytes stores at 50h onwards. Store result in external RAM location 2000h (LSB) and 2001h (MSB).
  - e) Draw internal structure of port 1 pin.

- 4. a) Attempt any THREE of the following:** **12**
- (i) Draw software development cycle.
  - (ii) List modes of serial communications with name and data size.
  - (iii) Write an ALP to get byte from  $P_0$  and  $P_1$  add it and send it to  $P_2$ .
  - (iv) Write an ALP to send, MSBTE on TXD line with crystal frequency = 11.0592 MHz and to have 9600 baud rate.
- b) Attempt any ONE of the following:** **6**
- (i) Write an ALP to arrange 10 bytes starting from 50h onwards, in descending order.
  - (ii) Interface 32KB RAM and 32 KB EPROM with 8051.
  - (iii) Draw address map table for 32 KB RAM using 16 KB Chips and 32 KB EPROM using 16 KB Chips. Draw decoder circuit.
- 5. Attempt any FOUR of the following:** **16**
- a) Draw format of IE and IP register.
  - b) Draw interrupt structure of 8051  $\mu$ c
  - c) Explain sequence of operations after arrival of interrupt.
  - d) Draw the format of SCON register and explain it.
  - e) Draw the format of PCON register. How to double baud rate?
- 6. Attempt any FOUR of the following:** **16**
- a) Write an ALP for 500  $\mu$ sec delay,  $f_{osc} = 12$  MHz.
  - b) Compare Timer and Counter operation.
  - c) Draw format of CWR for BSR and I/O Mode of 8255.
  - d) List interrupts with their priority and vector addresses.
  - e) Explain selection factor of microcontroller.
-