



17509

21718

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 the format of TCON and state the function of each bit in it.
 - ii) Compare between RISC and CISC machines (any four points).
 - iii) Write a program in 'C' to read a byte of data from Port 1 if it is greater than 99 send it to Port 0 otherwise send it to Port 2.
 - iv) Define Baud rate. State the Baud rate of each mode in UART.
- b) Attempt **any one** of the following : **6**
 - i) Describe the function of following instructions in terms of length of bytes and operation.
 - a) RRCA
 - b) DIV AB
 - c) INB P1.3, DOWN
 - ii) Draw the architecture of 8051 microcontroller.
2. Attempt **any two** of the following : **16**
 - a) Write assembly language program to find largest number from the array of ten numbers stored in external memory RAM. Assume suitable data.
 - b) Draw interface diagram of ADC 0809 with 8051. Write 'C' language program to generate 50 Hz sq. wave with crystal freq = 12 MHz.
 - c) Draw interfacing diagram for stepper motor with 8051. Draw flow chart for rotating stepper motor in clockwise direction.

P.T.O.



3. Attempt **any four** of the following.
- a) i) Convert $(1011101)_2$ to $()_{10}$.
 - ii) Subtract $(1001)_2$ from $(1100)_2$ by using 2's complement method.
 - b) Draw program memory organization for i) $E\bar{A} = 0$ ii) $E\bar{A} = 1$.
 - c) Compare between 8051 and 8052 microcontroller.
 - d) Describe the standard data types in 'C' for 8051 with suitable example.
 - e) Draw interfacing diagram of DAC 0808 with 8051 microcontroller.
4. a) Attempt **any three** of the following : 12
- i) State the alternate function of Port 3 pins of microcontroller 8051.
 - ii) Compare EPROM and EEPROM (any four points).
 - iii) Write 'C' program to toggle only bit P1.2 continuously with 200 ms delay.
 - iv) Draw interfacing of LM 35 temperature sensor with 8051 microcontroller.
- b) Attempt **any one** of the following : 6
- i) Write assembly language program to count time period of square wave using 8051 counter. Assume suitable data.
 - ii) Draw the diagram to interface external RAM and ROM with 8051 microcontroller and explain the function of ALE and \overline{PSEN} pins of 8051.
5. Attempt **any two** of the following : 16
- a) Describe the addressing modes of 8051 with suitable example.
 - b) Write 'C' language program to transfer the message "AICTE" serially at baud rate 9600. Assume crystal frequency 11.0592 MHz.
 - c) Draw and explain the interfacing of seven segment LED display in common cathode with 8051 microcontroller. Write 'C' language program to display digit 0 to 9.
6. Attempt **any four** of the following : 16
- a) Draw the format of IE register of 8051 and state the function of each bit.
 - b) Describe the following assembler directives with one example.
 - i) ORG
 - ii) DB
 - iii) EQU
 - iv) END.
 - c) Write down the function of 16 pin connector of LCD module.
 - d) Draw and describe the interfacing of opto-isolator with 8051 microcontroller.
 - e) Explain system clock and machine cycle of 8051 microcontroller.
-