

Time:(3 Hours)

[Total Marks: 80]

N.B.: (1) Question No. 1 is **Compulsory**.

(2) Attempt any **three** questions out of the remaining **five**.

(3) Each question carries 20 marks and sub-questions carry equal marks.

(4) Assume suitable data if required.

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| 1 | Attempt any FOUR | 20 |
| | (a) Differentiate the CISC and RISC microcontroller. | (5) |
| | (b) Explain PSW of 8051. | (5) |
| | (c) Explain SCON and TMOD SFR'S of 8051. | (5) |
| | (d) Explain Embedded C data types in detail. | (5) |
| | e) a) Explain the following instructions for 8051 microcontrollers.
i) MOVX ii) CJNE iii) JB iv) AJMP v) SWAP | (5) |
| 2. | (a) Draw and explain memory organization of 8051. | (10) |
| | (b) What are 'Assembler Directives'? Explain with the examples. | (10) |
| 3. | (a) Explain addressing modes of 8051 with suitable examples. | (10) |
| | (b) Explain interrupt structure of 8051 with appropriate registers. | (10) |
| 4. | (a) Design 8051 based system with following specifications.
(i) 8051 CPU operating at 6 MHz
(ii) 32 KB of RAM using 16 KB chips
(iii) 8 KB of EPROM using 4 KB chips
Design the system with proper interface diagram and memory map Note:
#EA pin is grounded | (10) |
| | (b) Explain the structure of I/O ports of 8051 with neat diagram. | (10) |
| 5 | (a) Write 8051 based assembly Program to generate a square wave on P1.0 of 1Khz frequency and 50% duty cycle. | (10) |
| | (b) Write a program to transfer "A" serially using 8051 with baud rate 9600. | (10) |
| 6. | (a) Interface 7-segment LED display to 8051 and write a program using Embedded C to display digit 0 to 9. | (10) |
| | (b) Interface 8bit DAC with 8051, draw the logic interface diagram and write an assembly language program to generate continues rectangular wave form. | (10) |