

22426

23242

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) Illustrate your answers with neat sketches wherever necessary.
  - (2) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

**Marks**

**1. Attempt any FIVE of the following :**

**10**

- (a) List four features of 8051  $\mu$ c.
- (b) Find out number of address lines required to access 64 K Bytes of memory.
- (c) Define any two assembler directives of 8051  $\mu$ c with example.
- (d) Sketch the format of SCON and PCON SFR's.
- (e) Compare data and program memory.
- (f) Draw interfacing diagram of  $4 \times 4$  matrix with 8051  $\mu$ c.
- (g) State the applications of 8051  $\mu$ c.

**2. Attempt any THREE of the following :**

**12**

- (a) Draw internal memory organization of 8051  $\mu$ c and explain in detail.
- (b) List the instructions used for Boolean operations in 8051 instruction set with example.
- (c) Interface 4 K bytes of EPROM and 4 K bytes of RAM to 8051  $\mu$ c, also draw its memory map.
- (d) Write ALP for rotating stepper motor clockwise. Draw its interface diagram.



- 3. Attempt any THREE of the following : 12**
- (a) List the software and hardware interrupts used in 8051 with their vector address and priorities.
  - (b) Draw and explain I/O port structure of port 0 of 8051 microcontroller.
  - (c) Compare Harvard and Von-Newman architecture.
  - (d) Develop an ALP to read temperature from LM 35 sensor. Draw the interfacing diagram with 8051.
- 4. Attempt any THREE of the following : 12**
- (a) Compare directives of 8051 (8951, 8952, 8031, 8751).
  - (b) Write ALP to exchange 5 Byte data between two blocks of memory. Assume suitable memory location.
  - (c) Explain the modes of Timer operations in 8051  $\mu$ c.
  - (d) Draw interfacing of seven segment display with 8051  $\mu$ c. Write an ALP to display count from 0 to 9.
  - (e) Draw interfacing of ADC with 8051  $\mu$ c.
- 5. Attempt any TWO of the following : 12**
- (a) Draw and explain internal architecture of 8051  $\mu$ c (All blocks with execution of instruction) with example.
  - (b) Explain the need of following development cycle for execution :
    - (i) Editor (ii) Assembler
    - (iii) Compiler (iv) Cross compiler
    - (v) Linker (vi) Loader
  - (c) Draw and explain TMOD and TCON SFR's.
- 6. Attempt any TWO of the following : 12**
- (a) List the addressing modes in 8051  $\mu$ c. Explain each with example.
  - (b) (i) Draw and explain interfacing of 16 x 2 LCD display with 8051  $\mu$ c.  
(ii) Write ALP to display "WELCOME" on LCD display.
  - (c) Write ALP for generation of triangular waveform using DAC. Draw interfacing diagram for the same.
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