

17509

11920

3 Hours / 100 Marks

Seat No.

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- 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.

Marks

1. (A) Attempt any THREE of the following :

12

- (a) Draw symbol of NAND gate and write its truth table.
- (b) State function of following pins of 16×2 LCD.
 - (i) RS
 - (ii) R/\overline{W}
 - (iii) EN
 - (iv) LED+
- (c) List any four C data types with its size and ranges.
- (d) Write function of following pins of 8051 μ c.
 - (i) RST
 - (ii) \overline{PSEN}
 - (iii) RXD
 - (iv) \overline{EA}

- (B) Attempt any ONE of the following :** **6**
- (a) State alternate functions of Port 3.
 - (b) Describe addressing modes of 8051 with examples.
- 2. Attempt any TWO of the following :** **16**
- (a) Write an ALP to find largest number from given array of 10 bytes in external RAM location 2000h onwards. Store largest number in internal RAM location 40h.
 - (b) Draw interfacing diagram of DAC 0808 with 8051 μ C and write C program to generate triangular wave.
 - (c) Draw the interfacing diagram of stepper motor with 8051. Write excitation code to rotate it in clockwise direction.
- 3. Attempt any FOUR of the following :** **16**
- (a) Draw and explain Reset circuit of 8051 μ C.
 - (b) Describe mode 2 of timer. State applications of it.
 - (c) Write C program to toggle bits of P2. Use software delay.
 - (d) Convert $(59)_{10} = (?)_{16} = (?)_2$.
 - (e) Draw the format of SCON SFR.
- 4. (A) Attempt any THREE of the following :** **12**
- (a) Draw interfacing diagram for temperature measurement using LM 35, ADC 0808 with 8051 microcontroller.
 - (b) Explain bitwise shift operator with example.
 - (c) Subtract $(25)_{10}$ from $(52)_{10}$ using 2's compliment method.
 - (d) Draw the format of TCON sfr and explain each bit.

- (B) Attempt any ONE of the following :** **6**
- (a) Explain T-state, Machine cycle and instruction cycle.
 - (b) Explain stack memory. Write any two stack related instructions.
- 5. Attempt any TWO of the following :** **16**
- (a) Write C program to transmit 'MSBTE' on TXD line.
BR = 9600 bps and $f_{osc} = 11.0592$ MHz.
 - (b) Write an ALP to generate square wave of 1 kHz frequency on P2.3. Use timer 1 in mode1. $f_{osc} = 12$ MHz.
 - (c) Describe IDE with its components and state their functions.
- 6. Attempt any FOUR of the following :** **16**
- (a) Draw structure of Interrupt and explain it.
 - (b) Draw the interfacing diagram of 3×3 keyboard matrix with 8051. Also explain logic to read key.
 - (c) List any four assembler directive and explain it.
 - (d) Draw the structure of internal RAM of 8051.
 - (e) Draw the interfacing diagram of relay connected at P2.1 with 8051 microcontroller.
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