17509

11718

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**: **12**

a) Draw symbol and write truthtable for AND and EX-OR Gate.

b) Draw the format of SCON register.

c) List any four C-data types with it's range and size.

d) Compare 8051 and 8052 microcontrollers. (4 points)

B) Attempt **any one** : **6**

a) Draw the structure of internal RAM of 8051.

b) Explain following instructions with suitable example.

i) MOVC A, @ A+DPTR

ii) DAA

iii) XCHD A, @Ri

2. Attempt **any two**: **16**

a) Write an ALP to arrange 10 byte in internal RAM location 40h onwards in ascending order.

b) Interface ADC 0809 to 8051 and write C program to read analog data at CH7 and convert it to digital.

c) Interface stepper motor with 8051 and explain logic to rotate it clockwise by 360°. Assume step angle 1.8°. (No program).

P.T.O.

Marks

3. Attempt **any four** : **16**

a) Write the function of ALE and $\overline{PSEN}$ pins of 8051.

b) What will be content of PSW after addition of 2Bh and 9Dh ?

c) Which are the components of IDE ? Write function of any 4 ?

d) Compare Von-Neumann and Harward architecture.

e) List modes of serial communication in 8051. Explain mode 3 in detail.

4. A) Attempt **any three** : **12**

a) Interface DC motor with 8051.

b) Write C program to read P1and send it to P2.

c) Use NAND gate to implement AND, OR and NOT gate.

d) Draw block diagram of 8051.

B) Attempt **any one** : **6**

a) Write an ALP to generate square wave of 1 kHz frequency. Assume f_{osc} = 12 MHz.

b) Draw interrupt structure of 8051 and explain it.

5. Attempt **any two** : **16**

a) Interface DAC 0808 with 8051 and write C-program to generate sawtooth wave on P2.1.

b) Write an ALP to multiply content of internal RAM location 50h and 51h. Store the result at 200'0h (LSB) and 2001h (MSB) in external RAM.

c) Explain bitwise shift operation for right shift and left shift with suitable examples.

6. Attempt **any four** : **16**

a) What is stack memory ? Explain PUSH and POP instruction.

b) Explain function of RS, R/$\overline{W}$ and E pins in 16$\times$4 LCD.

c) Explain any four assembler directives.

d) Write the size and function of PC and DPTR.

e) Explain the logic to measure temperature using LM 35. Draw interfacing diagram.