22232

3 Hours / 70 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. Attempt any FIVE of the following : **5 × 2 = 10**

(a) State the features of 8051 μ controller.

(b) Draw the format of TCON Register.

(c) Explain the following instructions

(i) SWAP A

(ii) MUL AB

(d) Draw interfacing diagram of 16K × 8 RAM to 8051.

(e) Write two main Arduino software structure functions.

(f) Write any two specifications of DAC 0808 IC.

(g) Justify Thumb mode bit function of ARM7TDMI processor.

2. Attempt any THREE of the following : **3 × 4 = 12**

(a) Compare 8031 & 8751 derivatives of 8051 μc.

(b) Draw Pin diagram of 8051 μc.

(c) Draw the interfacing diagram of 4 × 4 matrix keyboard with 8051 μc.

(d) Explain Pin mode setting function in Arduino with example.

3. Attempt any THREE of the following : **3 × 4 = 12**

(a) Compae RISC & CISC.

(b) Develop a program to generate square wave on P2.7 of 8051 using software delay.

(c) Draw & explain IE SFR in 8051 μc.

(d) Draw the interfacing diagram of stepper motor with 8051 μc. Write a 'C' language program to rotate a stepper motor counter clockwise by 360°.

4. Attempt any THREE of the following : **3 × 4 = 12**

(a) Draw the interfacing of key & LED to 89C51 to Pins P1.2 & P2.2. Write a C language program to read the status of key & display on LED. [Key open = LED OFF; Key close = LED ON]

(b) Illustrate data types used in 'C' with their ranges.

(c) Write a 'C' program to transmit 'MSBTE' on T×D Fosc = 11.0592 MHz & Baud rate = 9600 bps.

(d) Explain the uses of ATmega 328 digital pins 0(Rx) & 1(Tx).

(e) Find the values of TMOD to operate as timers in the following modes :

(i) mode 1 Timer 1

(ii) mode 2 Timer 0

(iii) mode 2 Timer 1

(iv) Timer 0 mode 1

5. Attempt any TWO of the following : **2 × 6 = 12**

(a) (i) Draw the format of SCON register.

(ii) Write a C program to receive bytes of data serially & put them in P1. Set the baud rate = 4800, 8 bit data & 1 stop bit.

(b) (i) State & explain the need of following development tools μc board :

(i) Editor

(ii) Compiler

(iii) Linker

(ii) Write a C program to find the largest no in a block of 10 numbers stored at location 40 H onwards in internal RAM.

(c) (i) Distinguish between Harvard & Von Neumann architecture of computers.

(ii) Draw the interfacing diagram of ADC with 8051.

6. Attempt any TWO of the following : **2 × 6 = 12**

(a) Develop a C program to generate a square wave of 2 kHz on port pin P2.1 generate a delay using timer – 0, mode – 1. Assume crystal frequency 11.0592 MHz.

(b) Sketch diagram showing relay interfacing with Arduino & write C program to operate relay.

(c) Draw interfacing diagram of 16×2 LCD display with 89C51 & write a 'C' program to display character 'D' on it.
