**Scheme – G**

# Sample Test Paper - I

**Course Name : Diploma in Electrical Engineering**

**Course Code : EE** **17509**

**Semester : Fifth**

**Subject Title : Microcontroller and Applications**

**Marks : 25** **Times:1 Hour**

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**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Q1. Attempt any THREE of the following.** **(9 Marks)**

a. List the features of 8051Microcontroller.

b. Draw the symbol of following logic gates with truth table.
   i) AND ii) NAND iii) EX-OR

c. Draw the pin diagram of 8051Microcontroller.

d. Differentiate between RAM and ROM Memory

**Q2. Attempt any TWO of the following.** **(8 Marks)**

a. Differentiate between Microprocessor and microcontroller.

b. List any four addressing modes with one example each.

c. Convert the following numbers into binary and decimal.
   i) $(78)_{16}$ ii) $(177)_{16}$

**Q3. Attempt any two of the following.** **(8 Marks)**

a. Draw the PSW format for 8051Microcontroller.

b. Write down the difference between bit, byte, nibble and word with example.

c. Draw the format of IE and IP.

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# Sample Test Paper - II

**Course Name : Diploma in Electrical Engineering**

**Course Code : EE**

**Semester : Fifth**

**17509**

**Subject Title : Microcontroller and Applications**

**Marks : 25** **Times:1 Hour**

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**Instructions:**

1. All questions are compulsory.
2. Illustrate your answers with neat sketches wherever necessary.
3. Figures to the right indicate full marks.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.

**Q1. Attempt any THREE of the following.** **(9 Marks)**

a. Draw neat interfacing diagram of3*3 key matrix key board.

b. Write an assembly language program (ALP) of 8051 for adding two 8 bit numbers.

c. Draw the interfacing diagram of 7 segment display in multiplexed mode.

d. Define baud rate in UART of 8051.Write the function of SMOD for baud rate.

**Q2. Attempt any TWO of the following.** **(8 Marks)**

a. State any four C data types with their value range.

b. State the functions of RS, EN, R/W and VEE pins of 20X4 LCD display

**c.** Draw interfacing diagram of stepper motor with 8051 microcontroller.

**Q3. Attempt any two of the following.** **(8 Marks)**

a. Draw DAC interfacing diagram with 8051.

b. Draw format of SFR SCON and explain each bit.

**c.** Write 'C' language program to transfer the message "HELLO" serially at baud rate 4800, 1 start bit, 8 bit data, 1 stop bit. Assume Crystal frequency 11.0592MHz

**Scheme – G**

## Sample Question Paper

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|---|---|---|
| **Course Name** | **: Diploma in Electrical Engineering** | |
| **Course Code** | **: EE** | **17509** |
| **Semester** | **: Fifth** | |
| **Subject Title** | **: Microcontroller and Applications** | |
| **Marks** | : **100** | **Time : 03 Hours** |

**Instructions:**

a) All questions are compulsory

b) Illustrate your answers with neat sketches wherever necessary

c) Figures to the right indicate full marks

d) Assume suitable data if necessary

e) Preferably, write the answers in sequential order

**Q1. A) Attempt any THREE** **(12 Marks)**

a) List any four features of 8051 Microcontroller

b) State the functions of RS, EN, R/W and VEE pins of 20X4 LCD display

c) State any four C data types with their value range

d) Draw the format of PSW of 8051and State the function of each bit of it.

**Q1. B) Attempt any ONE** **(06 Marks)**

a) Draw the format and explain each bit of IE and IP SFR.

b) Describe the function of following instruction:

i) MOVC A, @ A+ DPTR ii) SWAP A iii) DA A

**Q2. Attempt any TWO** **(16 Marks)**

a) Write a assembly language program to generate a square wave of 1KHz at P1.2 of 8051. Use timer 0 of microcontroller. Assume crystal frequency = 12MHz.

b) Draw interfacing diagram of DAC 0808 with 8051 microcontroller. Write C language program to generate square wave of 50Hz. Assume crystal frequency is 12MHz.

c) Draw interfacing diagram for temperature measurement using LM35, ADC 0808 with 8051 microcontroller. Draw flowchart for measurement of temperature using above interfacing diagram.

**Q3. Attempt any FOUR** **(16 Marks)**

a) State the function of following pins:

a) PSEN b) EA c) ALE d) RESET

b) Compare 8051 microcontroller and 8052 Microcontroller (any four points).

c) Write down the instructions for following operation using C operator:

i) Bit wise shift data left 4 times ii) Bit wise shift data right 4 times

d) Compare EEPROM and FLASH Memory (any four points).

e) Draw neat interfacing diagram of 3 X 3 key matrix.

**Q4. A) Attempt any THREE** **(12 Marks)**

a) Draw interfacing diagram of stepper motor with 8051 microcontroller

b) Write C language program to toggle all bits of P1 continuously

c) Compare microprocessor and microcontroller on the basis of memory, timer, I/O ports and serial ports

d) Describe the dual role of port 0 in 8051 microcontroller

**Q4. B) Attempt any ONE** **(06 Marks)**

a) List any four addressing modes with one example each.

b) Draw format of TMOD and describe four timer modes of 8051 microcontroller.

**Q5. Attempt any TWO** **(16 Marks)**

a) Write 'C' language program to transfer the message "MSBTE" serially at baud rate 9600, 8 bit data, 1 stop bit. Assume Crystal frequency 11.0592MHz

b) Write a assembly language program to find largest number from the array of ten numbers stored in internal RAM 40H onwards.

c) Draw the interfacing diagram to interface 8 switches at P0.0 to P0.7 and 8 LEDs at P2.0 to P2.7. Write C language program to read Port 0 status and send it to Port 2.

**Q6. Attempt any FOUR** **(16 Marks)**

a) States interrupts in 8051 microcontroller and give their priority upon reset

b) Draw interfacing diagram of four 7 segment display with 8051 microcontroller in multiplexed mode.

c) State any four assembler directives.

d) State the alternate functions of PORT 3

e) Draw interfacing diagram to interface relay at P1.0 and opto-isolator at P1.7