Sem-V- Industry Electrical systems - II (EE-G)

17509

21718

3 Hours / 100 Marks

Seat No. | | | 2 | 1 | 4 | 0 | 8 | 6 |

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** of the following : **12**

i) Draw the format of TCON and state the function of each bit in it.

ii) Compare between RISC and CISC machines (any four points).

iii) Write a program in 'C' to read a byte of data from Port 1 if it is greater than 99 send it to Port 0 otherwise send it to Port 2.

iv) Define Baud rate. State the Baud rate of each mode in UART.

b) Attempt **any one** of the following : **6**

i) Describe the function of following instructions in terms of length of bytes and operation.

a) RRCA

b) DIV AB

c) INB P1.3, DOWN

ii) Draw the architecture of 8051 microcontroller.

2. Attempt **any two** of the following : **16**

a) Write assembly language program to find largest number from the array of ten numbers stored in external memory RAM. Assume suitable data.

b) Draw interface diagram of ADC 0809 with 8051. Write 'C' language program to generate 50 Hz sq. wave with crystal freq = 12 MHz.

c) Draw interfacing diagram for stepper motor with 8051. Draw flow chart for rotating stepper motor in clockwise direction.

Marks

3. Attempt **any four** of the following. **16**

a) i) Convert $(1011101)_2$ to $(\ )_{10}$.

ii) Subtract $(1001)_2$ from $(1100)_2$ by using 2's complement method.

b) Draw program memory organization for i) $E\overline{A} = 0$ ii) $E\overline{A} = 1$.

c) Compare between 8051 and 8052 microcontroller.

d) Describe the standard data types in 'C' for 8051 with suitable example.

e) Draw interfacing diagram of DAC 0808 with 8051 microcontroller.

4. a) Attempt **any three** of the following : **12**

i) State the alternate function of Port 3 pins of microcontroller 8051.

ii) Compare EPROM and EEPROM (any four points).

iii) Write 'C' program to toggle only bit P1.2 continuously with 200 ms delay.

iv) Draw interfacing of LM 35 temperature sensor with 8051 microcontroller.

b) Attempt **any one** of the following : **6**

i) Write assembly language program to count time period of square wave using 8051 counter. Assume suitable data.

ii) Draw the diagram to interface external RAM and ROM with 8051 microcontroller and explain the function of ALE and $\overline{PSEN}$ pins of 8051.

5. Attempt **any two** of the following : **16**

a) Describe the addressing modes of 8051 with suitable example.

b) Write 'C' language program to transfer the message "AICTE" serially at baud rate 9600. Assume crystal frequency 11.0592 MHz.

c) Draw and explain the interfacing of seven segment LED display in common cathode with 8051 microcontroller. Write 'C' language program to display digit 0 to 9.

6. Attempt **any four** of the following : **16**

a) Draw the format of IE register of 8051 and state the function of each bit.

b) Describe the following assembler directives with one example.

i) ORG

ii) DB

iii) EQU

iv) END.

c) Write down the function of 16 pin connector of LCD module.

d) Draw and describe the interfacing of opto-isolator with 8051 microcontroller.

e) Explain system clock and machine cycle of 8051 microcontroller.