

Total No. of Questions : 12]

P1080

SEAT No. :

[Total No. of Pages : 3

[4163] - 252

T.E. (Electrical)

MICROCONTROLLER AND ITS APPLICATIONS

(2008 Pattern) (Sem. - I)

Time : 3 Hours]

[Max. Marks : 100

Instructions to the candidates:-

- 1) *Answer any 3 questions from each section.*
- 2) *Answer 3 questions from section I and 3 questions from section II.*
- 3) *Answers to the two sections should be written in separate answer books.*
- 4) *Neat diagrams must be drawn wherever necessary.*
- 5) *Figures to the right indicate full marks.*
- 6) *Use of logarithmic tables, slide rule, Mollier charts, electronic pocket calculator and steam tables is allowed.*
- 7) *Assume suitable data, if necessary.*

SECTION - I

- Q1)** a) Explain internal RAM structure of μc 8051. [6]
b) Explain the use of PC, SP and DPTR. [6]
c) Write short notes on SFR's. [4]

OR

- Q2)** a) Draw and explain the PSW of 8051 μc . [6]
b) Explain in detail internal & external data & program memory structure of 8051 μc . [6]
c) Compare microprocessor and microcontroller. [4]

- Q3)** a) Explain addressing modes of 8051 μc . [6]
b) Write the sequence of instruction that sets carry flag. [6]
c) Write program to load 40H in R_6 register of Bank 3. [4]

OR

P.T.O.

Q4) a) Explain the following instruction. [6]

- | | |
|---------------------|----------------------|
| i) PUSH OO | ii) MOVC A, @ A+DPTR |
| iii) JMP @ A + DPTR | iv) JNB P1.3, radd |
| v) MOV @ Rp, # n | vi) ANL A, @ Rp |
- b) Write a program to push R_0 , R_1 & R_2 of Bank 0 onto the stack and pop them back into R_5 , R_6 & R_7 of Bank 3. [6]
- c) State the two condition under which program opcodes are fetched from external memory rather than internal memory. [4]

Q5) a) Explain the interrupt structure of 8051 μ c. If both INT0 and INT1 in the IP \$ FR are set to High. What happen if both are activated at the same time. [8]

- b) Draw logic diagram of serial port in mode 1. [5]
- c) Write a program to generate a square wave of 2kHz freq. Assume XTAL = 11.0592 MMZ. [5]

OR

Q6) Write short notes on the following: [18]

- a) Features of I²C modbus.
- b) CAN message frame format.
- c) Flex Ray protocol.

SECTION - II

Q7) a) Explain the procedure of interfacing 8051 with PC using RS232 communication protocol. [10]

- b) Write a note on use of simulator and emulator. [8]

OR

Q8) a) Draw the diagram for interfacing 8 KB data ROM and 8KB of Program ROM with 8051. Use starting address as 8000H. [10]

- b) Draw and explain the block diagram of interfacing of 8051 with 8255. [8]

Q9) a) Explain the procedure of interfacing 8 bit ADC with 8051. Draw the suitable diagram. [8]

- b) Write a note on measurement of temperature using 8051. [8]

OR

Q10)a) Draw the typical diagram of interfacing a stepper motor with 8051 and write assembly language program to rotate the stepper motor in clockwise direction. [8]

b) Write a note on measurement of pressure using 8051. [8]

Q11)a) Explain the procedure of measurement of voltage using 8051. Draw the relevant block diagram. [8]

b) Explain the interfacing of 4×4 matrix keyboard with 8051. Draw the suitable diagram. [8]

OR

Q12)a) Write a note on "DC motor control using 8051". [8]

b) Explain the interfacing of LCD with 8051. Draw the suitable diagram. [8]

