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SE-8281

B. E. - III (Sem. - V) (ECC) Examination

May / June – 2011

Micro-Controller & Interfacing : Paper - I

(New Course)

Time : **3** Hours] [Total Marks : **100**

Instruction :

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ B. E. - 3 (SEM. - 5) (ECC)

Name of the Subject :

☛ MICRO-CONTROLLER AND INTERFACING - 1 (NEW)

☛ Subject Code No. : 8 2 8 1 ☛ Section No. (1, 2,.....) : 1&2

Seat No. :

Student's Signature

SECTION - I

1 (a) Answer the following : **10**

(i) The memory code space of 8051 is ROM. True/False

(ii) Write instruction to select register bank 2.

(iii) Mention the range of general purpose data memory of 8051.

(iv) The time required for the execution of MOV A, B instruction is _____.

(v) List the files that are generated while assembling a program.

(vi) Which ports of 8051 micro-controller are used to access external memory ?

(vii) All conditional jumps are short jump. True/False Justify.

(viii) The time for execution of DJNZ instruction is _____.

(ix) Which port of 8051 micro-controller has no alternate function ?

(x) Identify the type of addressing mode of following :

(i) MUL AB

(ii) MOV A, # 32H

(b) Write a program to read the status of switch connected on port 1 and send the same status on LED's connected on Port 2. **5**

(c) Explain the following : **5**

(i) BIT

(ii) END

(iii) DB

(iv) $\overline{EA}$

(v) $\overline{PSEN}$

2 (a) Design a 8051 based system with 8 KB of program space, 8 KB of data ROM starting at 0000H and 16 KB of NV-RAM starting at 8000 H. Show the design using 74LS138 address decoder. **8**

(b) List the various interrupts of 8051. Also show the priority of interrupts and explain briefly. **7**

OR

2 (a) Explain the instruction MOVX and MOVC in detail with example. **8**

(b) Explain with the help of circuit diagram the power ON reset circuit of micro-controller. Also state the contents of all the registers after reset. **7**

3 Answer the following : (any **three**) **15**

(i) IE and IP special function register.

(ii) Various steps at the transmitter to send data serially to receiver

(iii) Various addressing modes of 8051 with example.

(iv) TCON and TMOD special function register.

SECTION - II

4 (a) Give the answer to the following questions : **10**

(i) In 8051 timer mode _____ is 16 bit timer.

(ii) When TI and RI flag are set ?

(iii) 8051 divide crystal frequency by _____ to generate machine cycle.

(iv) When Timer interrupt is generated ?

(v) What is function of 'MAX 232' IC ?

(vi) Write down the value needed to loaded in timer2 to generate 9600 baud rate when crystal frequency is 11.0592 MHz.

(vii) Calculate value to be loaded in TH1, for mode 2 to generate square wave of 10 kHz, for crystal frequency of 12 MHz.

(viii) What is auto reload mode?

(ix) 8051 has _____ number of timer.

(x) There are two SBUF one is used to transmit data and one is used to receive data. TRUE or FALSE ?

(b) Explain Intel HEX file. **4**

(c) Draw interface diagram of the LCD with 8051. Write down program to display data 'NO' on LCD. **6**

5 (a) Explain Half step, full step and interface with 8051 for stepper motor. **8**

(b) Explain structure of RTC DS 12887. Function of each location and interfacing with 8051. **7**

OR

5 (a) Explain 'Matrix Keyboard' interfacing with 8051, with flowchart. **8**

(b) Explain modes of timer used in 8051 in detail with block diagram of each mode. **7**

6 Attempt any **three** : **15**

(i) Write short note on DC Motor and PWM with program.

(ii) Write short note on RTC (Real time clock)

(iii) Write short note on relay and opto-isolaters

(iv) Write a program to read data from port P1 and send this to port P2 also send this data to the serial port. Do this continuously. XTAL = 11.0592 MHZ and Baud rate required 9600.

(v) Write short note on Different type of RAM and ROM.
