



[4459] – 161

Seat No.	
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T.E. (Electrical) (Semester – I) Examination, 2013
MICRO-CONTROLLER APPLICATIONS
(2008 Course)

Time : 3 Hours

Max. Marks : 100

- Instructions :** 1) Attempt **any three** questions from Section I and Section II on **separate** answer sheet.
2) Figures to the **right** indicate **full** marks.
3) **Neat** diagram must be drawn **wherever** necessary.
4) **Use** of non programmable calculator is **permitted**.

SECTION – I

1. a) Explain the concept of memory banks. How and in what sense is the SFR address different than the upper 128 bytes of on chip RAM ? 6
- b) Explain how the status of \overline{EA} pin affect to access the internal and external program memory with neat diagram. 6
- c) What do you mean by the term quasi-bi-directional port ? Why is port 0 of 8051 true bi-directional ? Explain with figure. 6

OR

2. a) What are the function of the following pins 10
 - i) RXD
 - ii) $\overline{INT0}$
 - iii) T0
 - iv) \overline{WR}
 - v) XTAL2
- b) What are the salient features of 8051 family of microcontroller ? 4
- c) Explain the utility of internal RAM with an example. 4

OR

3. a) Explain all bit manipulation instruction with an example. 8
- b) Write an assembly language program to find smallest number in an array. 8
4. a) Explain all types of JUMP and CALL instructions of 8051 microcontroller. 8
- b) Explain ROTATE and SWAP instruction. 4
- c) Calculate the largest possible time delay for timer in 8051 operating in mode 1 with crystal frequency of 6 MHz. 4

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5. a) With XTAL = 11.0592 MHz, find the TH1 value needed to have the following baud rate : 8
 a) 9600 b) 2400 c) 1200
 b) Explain the role of SMOD in serial communication. 8

OR

6. a) How the data is transferred using I²C Bus ? 8
 b) Explain the SPI Bus communication protocol with Master and three independent Slave. 8

SECTION – II

7. a) Write short notes on assembler, programmer, simulator and emulator. 8
 b) Explain the interfacing of 8051 with computer through RS232 with neat sketch. 8

OR

8. a) Describe tools helpful in various stage of microcontroller development system. Give the flow chart for development of microcontroller based product. 6
 b) Explain with neat diagram the interfacing of 8051 with external memory. 10
 9. a) Draw a schematic diagram and write assembly language program to rotate Stepper motor in 100 rotation. [1.8° full step, 200 steps/revolution]. 12
 b) Draw and explain the block diagram to implement the measurement of temperature of an electric oven using 8051 microcontroller. 6

OR

10. a) Explain the procedure of interfacing of ADC 0809 to 8051 microcontroller. Draw relevant schematic diagram. 10
 b) Write a program to generate following waveform using DAC interfaced with 8051 microcontroller. Draw the relevant block diagram. 8





11. a) With the help of neat diagram explain the interfacing of LCD with 8051 microcontroller. 8
- b) With the help of neat diagram and flowchart explain the concept of measurement of reactive power using 8051 microcontroller. 8
- OR
12. Write short notes on **any two** of the following : 16
- i) 8051 microcontroller based speed control the DC motor.
 - ii) 8051 microcontroller based frequency measurement.
 - iii) 8051 microcontroller based current measurement.
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