

UNIVERSITY OF PUNE
[4363]-162
T. E. (ELECTRICAL)
Examination - 2013
MICRO-CONTROLLER AND APPLICATION
(2008 Pattern)

[Time : 3 Hours]

[Max. Marks : 100]

Total No. of Questions : 12

[Total No. of Printed Pages :4]

Instructions :

- (1) Answers to the **two** sections should be written in separate answer-books.*
 - (2) Neat diagrams must be drawn wherever necessary.*
 - (3) Black figures to the right indicate full marks.*
 - (4) Your answer will be valued as a whole.*
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SECTION I

- Q1) a) Explain salient features of MCS-51 family. **[6]**
- b) Explain the structure of port 1 in 8051. **[6]**
- c) Draw functional block diagram of 8051 and explain XTAL 1 and XTAL 2 pins. **[6]**

OR

- Q2) a) Explain internal structure of I/O ports with neat sketch **[9]**
- b) Explain general purpose registers and special function registers of 8051 microcontroller. **[9]**

Q3) a) Write a program to find smallest number in an array of seven numbers (stored in internal RAM location 40H onwards) and store result at 50H. [8]

b) Explain with example bit level logical instructions [8]

OR

Q4) a) Explain in detail various jump type instructions [8]

b) What is different between RET and RETI instructions? Explain why we use RETI instruction in ISR instead of RET instruction. [8]

Q5) a) Explain the importance of TFX bit in TCOM register of 8051. [8]

b) Draw and explain I2C. [8]

OR

Q6) a) Explain SCON and SBUF SFR's in detail [8]

b) Write a program to transmit letter 'P' to serial com port using 8051 at 9600 baud rate (consider XTAL = 11.0592 MHz) [8]

SECTION II

Q7) a) Explain the following development tools: [18]

- (i) Simulator
- (ii) Assemblers
- (iii) Emulators

(iv) Cross Assembler

Q8) a) Discuss external memory interfacing with 8051 micro controller. Also discuss data memory and programme memory. [9]

b) Explain the role of 8255 in expanding I/O of 8051 micro controller. [9]

Q9) a) Write a programme to rotate stepper motor in clock wise direction using 8051 micro controller. [8]

b) Explain DAC and it's conversion methods. [8]

OR

Q10) a) Write a programme to measure temperature using 8051 [8]

b) Write a programme to generate triangular waveform using DAC. Also state EOC/SOC signals controlled using instructions. [8]

Q11) a) Discuss 4x4 key board interfacing with 8051 microcontroller. [8]

b) Draw and explain with a neat sketch for interfacing of 8051 to control DC motor. [8]

OR

Q12) a) Explain interfacing requirements in measurement of rms voltage using 8051 microcontroller. [8]

b) Write a short note of 16x2 LCD with its specifications and pin diagram. [8]