

Reg. No.



Manipal Institute of Technology, Manipal

(A Constituent Institute of Manipal University)



FIFTH SEMESTER B.TECH (INSTRUMENTATION AND CONTROL ENGINEERING)

END SEMESTER EXAMINATIONS, NOV/DEC 2015

SUBJECT: MICROPROCESSORS AND MICROCONTROLLERS [ICE 305]

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ANY FIVE FULL** questions.
- ❖ Missing data may be assumed suitably.

- | | | |
|-----|---|---|
| 1A. | List different types of memory available. | 2 |
| 1B. | Draw and explain the programming model of 8051. | 4 |
| 1C. | Sketch the relevant diagram of port 0 of 8051 and explain. | 4 |
| 2A. | Describe the external memory connection of 8051 with block diagram and its timings. | 5 |
| 2B. | Write an 8051 ALP to generate BCD up counter from 00 to 99 and send it to port 1. | 3 |
| 2C. | Explain the following instructions
i) MOVC A, @A+DPTR ii) XCHD A, @R1 iii) JNB TF1, target iv) PUSH 6H | 2 |
| 3A. | Draw the structure and explain TMOD and TCON registers of 8051. | 4 |
| 3B. | Write an 8051 ALP to continuously get the data from P0 and send it to P1 while simultaneously generating square wave of 2.5 KHz. | 3 |
| 3C. | Explain the UART communication and significance of SBUF in 8051. | 3 |
| 4A. | What is addressing mode? With an example explain any four addressing modes of ARM. | 5 |
| 4B. | What is THUMB mode in ARM? Explain its programmer's model with relevant diagram. | 3 |
| 4C. | Explain AMBA with neat block diagram. | 2 |
| 5A. | Show the interfacing diagram of keypad and stepper motor with LPC2148 and write a program to rotate the stepper motor 360° by pressing any one switch. | 6 |
| 5B. | Explain the PWM registers associated with LPC2148. | 4 |
| 6A. | Draw and explain CPSR in ARM. | 3 |
| 6B. | Write an ALP for PIC to toggle the bits of PORT A continuously by introducing delay. | 3 |
| 6C. | Sketch the RAM and ROM organization of PIC18 family and explain. | 4 |