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MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
A Constituent Institution of Manipal University

FIFTH SEMESTER B.TECH. (INSTRUMENTATION & CONTROL ENGG)
END SEMESTER EXAMINATIONS, DEC - 2017

SUBJECT: MICROPROCESSORS & MICROCONTROLLERS [ICE 3104]

Time: 3 Hours

MAX. MARKS: 50

Instructions to Candidates:

- ❖ Answer **ALL** the questions.
- ❖ Missing data may be suitably assumed.

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| 1A. | With the help of a neat block diagram explain the architectural details of 8051 microcontroller. | 5 |
| 1B. | Write an 8051 ALP to generate an even BCD up counter from 00 to 98. | 3 |
| 1C. | Differentiate between microprocessors and microcontrollers. | 2 |
| 2A. | Define a subroutine. With an example illustrate the sequence of events that occur during CALL and RET instructions of a subroutine executes. | 5 |
| 2B. | With the help of an example, explain the following instructions,
i) ANL ii) SWAP iii) XCHD | 3 |
| 2C. | Write two different instructions to clear the contents of A register in 8051 microcontroller. | 2 |
| 3A. | Draw the format and explain TMOD and TCON registers of 8051 with relevant example. | 5 |
| 3B. | Write a program to transmit "ICE" serially with a baud rate of 4800. | 3 |
| 3C. | What do you mean by interrupts? Mention the different interrupts in 8051 microcontroller with their priority. | 2 |
| 4A. | Draw and explain programmer's model of ARM7. | 5 |
| 4B. | Explain the following instructions with example,
i) LDMIA ii) LDMDDB | 3 |
| 4C. | Explain different forms of stack operations in ARM7. | 2 |
| 5A. | Explain the timer registers associated with LPC2148. | 5 |
| 5B. | Show the interfacing diagram of keypad and DC motor switch with LPC2148 and write the program segment to scan S2 and S8 keys. | 3 |
| 5C. | Draw and explain the pin select block for pin P0.5. | 2 |