Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

FIFTH SEMESTER B.TECH. (INSTRUMENTATION AND CONTROL ENGG.)

END SEMESTER EXAMINATIONS, DEC 2016/JAN 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.

1A.	With basic block diagram, explain the architecture of 8051 microcontroller.	**4**
1B.	Draw the diagram to connect 8k RAM and 16k ROM externally to 8051 and explain its working with timing diagram.	**4**
1C.	Explain the different criteria's for selecting microcontroller.	**2**
2A.	Mention any three addressing modes of 8051 and explain each with an example.	**3**
2B.	Write an ALP using 8051 mnemonics to generate a time delay using nested loop (Assume the inner and outer loop count as 100). Also calculate the generated delay.	**4**
2C.	Using register addressing mode and direct addressing mode swap the content of registers R5 and R6 in register bank 0.	**3**
3A.	Explain the function of each bit in PSW and TMOD.	**4**
3B.	What are interrupts and interrupt subroutines? Explain 8051 interrupt structure.	**4**
3C.	Explain the significance of SBUF in 8051.	**2**
4A.	List any six features of LPC2148 and explain the THUMB architecture with relevant diagram.	**6**
4B.	With respect to ARM, explain i) AMBA ii) IO0SET and IO0CLR.	**4**
5A.	Using LPC 2148 write a program to rotate the stepper motor by 135^0 clockwise direction when switch S2 is pressed. Also show its keyboard and stepper motor interface to LPC 2148.	**6**
5B.	With suitable example, explain the load and store instructions in ARM.	**4**