Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

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

END SEMESTER EXAMINATIONS, NOV/DEC 2016

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. Bring out the difference between i) Microprocessors and Microcontrollers, ii) Harvard and Von Neuman architecture, iii) RISC and CISC. **6**

1B. With the help of circuit diagram explain input/output operation of Port 1 in 8051. **4**

2A. Explain the following in brief with respect to 8051, i)Program status word ii) RAM organization iii) Indexed Addressing **6**

2B. Write an 8051 ALP to interchange two blocks of data residing at internal memory locations starting from 20h and 40h **2**

2C. Correct the following instructions if found to have wrong syntax. Explain the operation of corrected instructions, i) MOV C,A ii) ADD R6,A iii) MOVC A,@A+R1 vi) DEC DPTR **2**

3A. With relevant figure, explain the characteristics of Mode-1 of 8051 timer. **3**

3B. Correct the following code, **4**

```
        ORG 00H
        LJMP L1
        ORG 200H
L1:     MOV TMOD, #20H
        MOV TH0, # 0FDH
        MOV SCON, #50H
        SETB TR0
        MOV A, # “No”,  ; Send ‘No’ serially
        ACALL SEND
        MOV A, # 35       ;Send ‘35’ serially
        ACALL SEND
        MOV A, # 256
        ACALL SEND
        AJMP L1
```

```
SEND:   MOV SBUF, 0E0H
L2:     JBC TI, L2
        CLR TI
        CLR SCON.0
        RETI
```

3C. Write an 8051 ALP to generate two square waves – one of 5KHz frequency at pin P1.3 and another of frequency 25KHz at pin P1.5 using interrupts. Assume XTAL =22MHZ. **3**

4A. With neat diagram explain the programmer's model and different modes of ARM 7. **5**

4B. With relevant diagram explain full stack in ARM7. **3**

4C. Write a program to generate the following sequences on LEDs using LPC 2148, 10000000, 01000000……..00000001 and repeat forever. **2**

5A. Draw the interface diagram of keyboard and stepper motor with LPC 2148. Write a program to rotate the stepper motor by 360^0 anticlockwise when switch S1 is pressed. **6**

5B. Explain the timer operation in LPC 2148 with timing diagrams and the registers associated with it. **4**

********** END **********