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: DATA ACQUISITION AND INTERFACING [ICE 309]

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

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

1A.	With a neat diagram explain the operation of sample and hold circuit as (i) Peak follower (ii) Tracking Sample/Hold	**3**
1B.	Explain the operation of multiplexer (i) which is characterized by high immunity to transient voltages (ii) which is used to remove any interference due to common-mode signal.	**4**
1C.	With necessary sketches explain various characteristics of MOS switches.	**3**
2A.	Explain the operation of sigma delta converter with necessary block diagram and waveform	**3**
2B.	An 8 bit DAC produces V_{out}=0.05 V for digital input of 00000001. Find the full scale output voltage. What is the resolution? What is V_{out} for an input of 00101010?	**4**
2C.	Explain the transfer characteristics of PLL with necessary sketch.	**3**
3A.	Describe different modes of operation of 8255 with its block diagram.	**5**
3B.	With a neat diagram explain the operation of PLL as AM detector and phase shifter.	**3**
3C.	Explain the interrupt sequence of 8259.	**2**
4A.	With neat diagram explain the interfacing of temperature sensor with PIC micro controller.	**3**
4B.	Write an ALP for 8051 to rotate a stepper motor by 90° clockwise. Assume step angle of 2°	**2**
4C.	With a block diagram explain control logic, registers, transmitter and receiver sections of 8251	**5**
5A.	Explain bidirectional motor control using L293 chip.	**3**
5B.	Explain the flowchart for working of microcontroller based angular speed measuring instrument.	**2**
5C.	With a neat diagram explain time multiplexed 7-Segment Display interface with the microcontroller.	**3**
5D	For a given ADC0848 Vref=2.56V. Calculate the D0-D7 output if the analog input is (a) 1.7V (b) 2.1V	**2**
6A	List the performance specifications of ADC	**2**
6B.	Explain delta modulation and demodulation with necessary block diagrams.	**4**
6C	With timing diagram write the steps of data conversion of ADC 0804.	**4**

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