

Code No: RT41101

R13

Set No. 1

IV B.Tech I Semester Supplementary Examinations, February/March - 2018

DATA ACQUISITION SYSTEMS
(Electronics and Instrumentation Engineering)

Time: 3 hours

Max. Marks: 70

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any THREE questions from Part-B

PART-A (22 Marks)

1. a) Define resolution. [3]
- b) What are the advantages of R-2R DAC over weighted resistor? [4]
- c) What are the different classes of A/D converters? [4]
- d) List out various applications of ADC. [3]
- e) What are the basic NDC configurations? [4]
- f) What are the noise reduction techniques in DAS? [4]

PART-B (3x16 = 48 Marks)

2. a) What is a Data Converter? Tabulate popular data converters and mention their applications? [8]
- b) Explain the basic schematic of a DAC. [8]
3. a) Explain the operation and derive an expression for output of any one of Bipolar DAC. [8]
- b) A binary-weighted digital to analog converter has an input resistor of $100\text{ k}\Omega$. If the resistor is connected to a 5 V source, calculate the current through the resistor. [8]
4. a) Draw and explain voltage to frequency conversion using ADCs. [8]
- b) Derive an expression for output voltage of a dual slope ADC. [8]
5. a) Explain about switched capacitance NDCS. [8]
- b) Explain the working of NADC with SAR and ROM. [8]
6. a) Explain how a DAC can be used as an Analog Multiplier. [8]
- b) What is the use of ADC in a voice based PCM System. [8]
7. a) Explain in detail some of the error sources in data converters. [8]
- b) Explain the monolithic ADCs and interfacing to the μP . [8]