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]