MT8071 VIRTUAL INSTRUMENTATION

DETAILED SYLLABUS

OBJECTIVE:

- Introduce the principle, programming technique with instrument interfaces and applications of virtual instruments and to understand the basics of data acquisition are introduced in mechatronics systems.

UNIT I REVIEW OF VIRTUAL INSTRUMENTATION

Historical perspectives, advantages, block diagram and architecture of a virtual instrument, data -flow techniques, graphical programming in data flow, comparison with conventional programming.

UNIT II VI PROGRAMMING TECHNIQUES

VIS and sub-VIS loops and charts, arrays, clusters and graphs, case and sequence structures, formula nodes, local and global variables, string and file I/O.

UNIT III DATA ACQUISTION BASICS

AOC.OAC. 010. Counters & timers. PC Hardware structure, timing. Interrupts OMA, software and hardware installation

UNIT IV COMMON INSTRUMENT INTERFACES

Current loop, RS.232C/RS.485, GPIB, System buses, interface buses: USB, PCMCIA, VXI, SCXI, PXI, etc., networking basics for office & Industrial applications, Visa and IVI, image acquisition and processing. Motion control.

UNIT V USE OF ANALYSIS TOOLS

Fourier transforms, power spectrum correlation methods, windowing & filtering, VI application in various fields.

TEXT BOOK:

1. Gupta," Virtual Instrumentation Using Lab view" 2nd Edition, Tata McGraw-Hill Education, 2010

REFERENCES:

1. Gary Jonson, "Labview Graphical Programming", Fourth Edition, McGraw Hill, New York, 2006

2. Gupta. S., Gupta. J.P., "PC interfacing for Data Acquisition & Process Control", Second Edition, Instrument Society of America, 1994.

3. Sokoloff; "Basic concepts of Labview 4", Prentice Hall Inc., New Jersey 1998