

#### MANGALORE INSTITUTE OF TECHNOLOGY & ENGINEERING

(A Unit of Rajalaxmi Education Trust®, Mangalore)
Autonomous Institute affiliated to VTU, Belagavi, Approved by AICTE, New Delhi Accredited by NAAC with A+ Grade & ISO 9001:2015 Certified Institution

## **Model Question Paper**

## **Fifth Semester BE Degree Examination**

## **Virtual Instrumentation**

Time: 3 Hours(180 Minutes)

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.

2. M: Marks, L: RBT (Revised Bloom's Taxonomy) level, C: Course outcomes.

Explain the working architecture of Virtual Instrumentation (VI) with a block diagram.   10   L2   CO1			Module -1	M	L	C					
B.   Illustrate the various Data Flow Techniques and their key characteristics.   10   L2   CO1	Q1	a.		10	L2	CO1					
a. Explain the main components of a PC-based Data Acquisition (DAQ) system with a labeled diagram. b. Differentiate between graphical programming and textual programming, by giving examples each.  Module- 2  a. Explain Sampling, Sampling Frequency, and Resolution in ADC and describe the role of a Data Acquisition Card. b. Explain Sampling, Sampling Frequency, and Resolution in ADC and describe the role of a Data Acquisition Card. b. Explain Digital Input/Output (I/O) works in a data acquisition system and describe the calibration process with the help of a neat, labeled sketch. b. Illustrate the different I/O techniques used in DAQ systems with a flow chart.  Module - 3  a. Apply modular programming techniques in LabVIEW to develop a user-defined function using sub-VIs. b. Explain Digital Input/Output (I/O) works in a data acquisition system and function using sub-VIs.  Develop a VI that uses loops to compute and display the sum and average of the first N natural numbers.  Develop a VI that uses loops to compute and display the sum and average of the first N natural numbers.  Develop a VI to create and manipulate arrays, and explain the array functions used for data handling.  Module - 4  Apply RS-232 communication protocol to interface a PC with an external anistrument. With XTAL=11.0592MHz, find the value needed to have following baud rate. i)9600 ii)4800 iii)2400  b. Apply the OSI/ISO model to a real-time serial bus communication scenario and explain the mapping of its layers with a diagram.  OR  Explain IEEE 488/GPIB architecture supports parallel communication with a 10 L3 CO4		b.		10	L2	CO1					
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Explain IEEE 488/GPIB architecture supports parallel communication with a 10 13 CO4		b.		10	L3	CO4					
	OR										
	Q8	a.		10	L3	CO4					

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	b.	Explain the architecture of MODBUS with a neat sketch and apply its functionality to a real-time data acquisition system.	10	L3	CO4			
Module – 5								
Q9	a.	Apply the concept of PID control to design a feedback control system with a block diagram and explain its role in maintaining system stability.	10	L3	CO5			
	b.	Develop a VI to simulate a second order control system using LabVIEW software.	10	L3	CO5			
OR								
Q10	a.	Develop a basic ON/OFF temperature control system and explain its operation with reference to the indicators and controls present on a joint panel.	10	L3	CO5			
	b.	Apply LabVIEW programming techniques to build a VI that generates an HTML page.	10	L3	CO5			

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