

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023****Subject Code:3170318****Date:16-12-2023****Subject Name: Virtual Instrumentation****Time: 10:30 AM TO 01:00 PM****Total Marks:70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.
4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) Define the following terms (i) Virtual Instrumentation (ii) Sensors	03
	(b) Give the difference between Virtual Instruments and Traditional Instruments.	04
	(c) Explain the Architecture of Virtual Instruments in detail with necessary block diagram.	07
Q.2	(a) Enlist different types of Analog Filters.	03
	(b) Give the comparison between Graphical and Textual Programming.	04
	(c) Explain the process of Analog to Digital conversion in detail with necessary block diagram.	07
OR		
	(c) Enlist various types of A-to-D converters and explain one of them in detail.	07
Q.3	(a) Define: (i) Formula Node (ii) Clusters	03
	(b) State the Sampling theorem with necessary formula.	04
	(c) Describe the For Loop structure with an example.	07
OR		
Q.3	(a) Enlist various File Input/Output operations with its functions.	03
	(b) Give the advantages of GPIB and VISA.	04
	(c) Describe the While loop structure with an example.	07
Q.4	(a) Enlist different interface buses with its applications.	03
	(b) Give the comparison between IIR and FIR filter.	04
	(c) Enlist and explain the techniques for QRS detection.	07
OR		
Q.4	(a) Enlist the advantages of 4–20mA current loop.	03
	(b) List the advantages and disadvantages of digital filters.	04
	(c) Explain the block diagram of virtual instrumentation of modular EMG machine.	07
Q.5	(a) Define the terms: (i) Signal Noise (ii) Signal Conditioning	03
	(b) Write a short note on Wavelet Transform.	04
	(c) Explain dataflow programming with suitable example.	07
OR		
Q.5	(a) Draw the RS232 DB9 pinout.	03
	(b) Describe the applications of VI in Statistics and Curve Fitting.	04
	(c) Describe the array operations with suitable examples.	07
