APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER

Q.P. Code : IAR0820321C-I **(Pages: 2)** **Name:** .....

Reg. No: .....

THIRD SEMESTER M.TECH. DEGREE EXAMINATION FEBRUARY 2021

Branch: Mechanical Engineering **Specialization: Industrial Automation and Robotics**

08ME7321(C) VIRTUAL INSTRUMENTATION

Time: 2 hour 15 minutes **Max. Marks: 60**

Answer all six questions

Modules 1 to 6: Part '*a*' of each question is compulsory and answer either part '*b*' or part '*c*' of each question.

Q. No.	Module 1	Marks
1 (a)	Explain the basic differences between traditional instruments and software-based virtual instruments.	3
	Answer b *or* c	
(b)	How a typical PC based Data Acquisition System works? Explain in detail with a neat block schematic.	6
(c)	With the help of block diagram, explain the architecture of virtual instruments.	6

Q. No.	Module 2	Marks
2 (a)	What is the difference between a shift register and a feedback node? Explain why they are used in loops?	3
	Answer b *or* c	
(b)	Distinguish between *device driver* and *instrument driver* with a few examples.	6
(c)	What are the advantages and disadvantages of using global variables in a VI?	6

Q. No.	Module 3	Marks
3 (a)	What is the role of DAQ software in PC based measurement systems?	3
	Answer b *or* c	
(b)	With neat diagram, explain the working and differences of a 3 bit R-2R ladder DAC and 3 bit binary weighted resistor network DAC.	6
(c)	How a successive approximation ADC works? Explain with neat diagrams.	6

Phd

Q. No.	Module 4	Marks
4 (a)	Mention the various methods to terminate communication in GPIB.	3
	Answer b *or* c	
(b)	Explain in detail about GPIB/ IEEE488 with a block diagram, List down the procedure for acquiring data from GPIB using MAX.	6
(c)	Explain PCI BUS and PCMCIA interface.	6

Q. No.	Module 5	Marks
5 (a)	Explain how DAQ Assistant is used to acquire and generate signals. Write the procedure to create, configure, test and generate LabVIEW codes using DAQ Assistant.	4
	Answer b *or* c	
(b)	List out the functional areas of image processing. Explain the parts, functions, and various functions carried out by IMAQ with a example.	8
(c)	What is called distributed I/O module? Explain the components and functions of any one distributed I/O system with proper illustration.	8

Q. No.	Module 6	Marks
6 (a)	Discuss a few signal processing and analysis functions in LabView.	4
	Answer b *or* c	
(b)	Define the term 'Signal Conditioning' and its role in DAQ-VI system?	8
(c)	What is the composition and format of an image file? Build a VI to find the histogram from the acquired image.	8