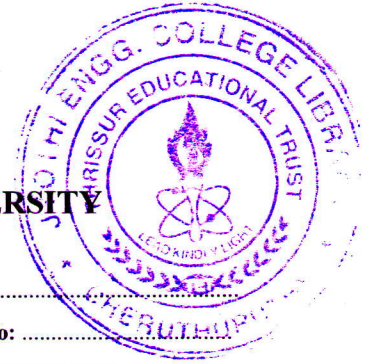


APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
08 PALAKKAD CLUSTER



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 <i>device driver</i> and <i>instrument driver</i> 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 |

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 an 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