

APJ ABDULKALAM TECHNOLOGICAL UNIVERSITY

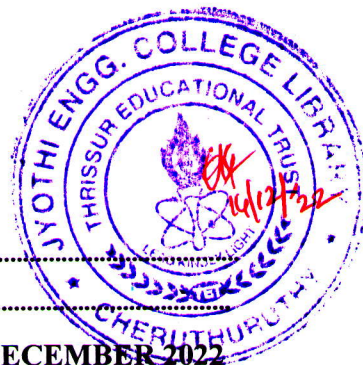
08 PALAKKAD CLUSTER

Q. P. Code: IAR0822321C-I

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Name:

Reg. No:.....



THIRD SEMESTER M.TECH. DEGREE EXAMINATION DECEMBER 2022

Branch: Mechanical Engineering

Specialization: Industrial Automation and Robotics

08ME7321(C) VIRTUAL INSTRUMENTATION

Time:3 hours

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	What are the advantages of graphical programming over conventional programming techniques?	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	What are the advantages and disadvantages of using global variables in a VI?	6
c	What is a For Loop? Under what circumstances are For Loops used? How does a While Loop vary from a For Loop?	6

Q. No.	Module 3	Marks
3.a	What are the major components of a PC-based data acquisition system?	3

Answer b or c

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|---|---|---|
| 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 | Explain in detail about DMA transfer mechanism with neat schematic. List its 3 types of data transfer operations | 6 |

Q. No.	Module 4	Marks
4. a	What is 'Error Handling' in VI? How it is achieved in any VI program?	3

Answer b or c

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|---|---|---|
| b | Write short notes on : (i) PCMCIA (ii) PXI (iii) 4-20 mA current loop | 6 |
| c | Explain PCI BUS and PCMCIA interface. | 6 |

Q. No.	Module 5	Marks
5.a	Define the term 'Signal Conditioning' and its role in DAQ-VI system.	4

Answer b or c

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|---|--|---|
| 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 | Explain about motion control system using VI with a neat schematic. | 8 |

Q. No.	Module 6	Marks
6.a	How will you design a filter in LabView?	4

Answer b or c

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|---|---|---|
| b | What is VISA? Describe the basic operations and programming under VISA. | 8 |
| c | Define the term 'signal conditioning' and its role in DAQVI system? | 8 |