

Reg No.: \_\_\_\_\_

Name: \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY**  
**FIFTH SEMESTER B.TECH DEGREE EXAMINATION, APRIL 2018**

**Course Code: AE361**

**Course Name: VIRTUAL INSTRUMENT DESIGN (AE)**

Max. Marks: 100

Duration: 3 Hours

**PART A**

*Answer any two full questions, each carries 15 marks*

- |   |   | Marks |
|---|---|-------|
| 1 | a) What is sampling theorem? Draw a simple sample circuit.                        | (3)   |
|   | b) Explain the concept of quantization with an example.                           | (5)   |
|   | c) What is graphical programming? Compare it with conventional programming.       | (7)   |
| 2 | a) Sketch and explain successive approximation type ADC.                          | (7)   |
|   | b) With neat schematic explain data flow technique.                               | (8)   |
| 3 | a) Define hold circuit.   | (2)   |
|   | b) What is the significance of DAC in digital instrumentation? Name any two DACs. | (5)   |
|   | c) Explain the working of virtual instrument with the help of a block diagram.    | (8)   |

**PART B**

*Answer any two full questions, each carries 15 marks*

- |   |   |     |
|---|---|-----|
| 4 | a) With graphical diagram explain the function of arrays in VI programming. | (5) |
|   | b) Define State Machine in VI programming.                                  | (3) |
|   | c) Explain the function of timer in data acquisition system.                | (7) |
| 5 | a) Explain sequence structures in VI programming.                           | (4) |
|   | b) Define local variable in VI programming.                                 | (3) |
|   | c) What are the main components of data acquisition system?                 | (5) |
|   | d) What are the interface requirements for data acquisition?                | (3) |
| 6 | a) Explain the importance of graphs in VI programming.                      | (3) |
|   | b) Define case structure in VI programming.                                 | (5) |
|   | c) Explain DMA with neat block diagram.                                     | (7) |

**PART C**

*Answer any two full questions, each carries 20 marks*

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|---|---|------|
| 7 | a) With neat schematic explain the function of current loop in instrument interfaces. | (5)  |
|   | b) Define Firewire and its uses.  | (5)  |
|   | c) Write a note about distributed I/O modules in virtual instrumentation.             | (10) |
| 8 | a) Define the following:  | (10) |
|   | i) PXI                      ii) PXI system controllers                                |      |
|   | b) Give any one application of virtual instrumentation in instrument control.         | (10) |
| 9 | a) Explain the function of RS 232C instrument interface. State its advantage.         | (5)  |
|   | b) Define VXI bus interface and its merit.  | (5)  |
|   | c) Quote any one application of virtual instrumentation in motion control.            | (10) |

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