

Roll No.

Total No. of Pages : 02

Total No. of Questions : 09

B.Tech.(EIE) (2011 & Onwards) (Sem.-5)
VIRTUAL INSTRUMENTATION & DATA ACQUISITION

Subject Code : EI-301

M.Code : 58021

Time : 3 Hrs.

Max. Marks : 60

INSTRUCTION TO CANDIDATES :

1. **SECTION-A** is **COMPULSORY** consisting of **TEN** questions carrying **TWO** marks each.
2. **SECTION-B** contains **FIVE** questions carrying **FIVE** marks each and students has to attempt any **FOUR** questions.
3. **SECTION-C** contains **THREE** questions carrying **TEN** marks each and students has to attempt any **TWO** questions.

SECTION-A

Q1. Answer briefly :

- a) Why there is need of modulation in telemetry?
- b) Name the main characteristics of an ADC.
- c) Name the common communication channels used for the telemetry.
- d) What are the drawbacks of the pneumatic transmission?
- e) What is scientific computing and how the LabVIEW is helpful?
- f) Differentiate between a virtual and a traditional instrument.
- g) What does polymorphic means in LabVIEW?
- h) How do the clusters differ from the arrays?
- i) What are local and global variables?
- j) What is the basic difference between a waveform chart and a graph?

SECTION-B

- Q2. Describe the main functional blocks of a typical PC based DAQ system.
- Q3. Describe in details the Pulse Amplitude Modulation system as used for telemetry.
- Q4. Differentiate between the MathScript node and formula node in LabVIEW.
- Q5. Discuss the parameters that are helpful in selection of DAQ measurement hardware.
- Q6. Differentiate between time and frequency division multiplexing as applied to telemetry.

SECTION-C

- Q7. (a) What functions are available to control the timings of loops in LabVIEW?
(b) Create a VI to compute the following equations and to plot the results on a waveform graph.

$$y1 = x^3 + 2x^2 - 5$$

$$y2 = x^2 + 1$$

where x varies from 0 to 10 in steps of 1.0.

- Q8. (a) What are the different ways for connecting the instruments to the PC? How the LabVIEW communicate with these instruments.
(b) Describe PCM telemetry.
- Q9. Explain the following measurement systems :
 - (a) Differential measurement system
 - (b) Referenced single ended measurement system
 - (c) Non-referenced single ended measurement system

NOTE : Disclosure of Identity by writing Mobile No. or Making of passing request on any page of Answer Sheet will lead to UMC against the Student.