FACULTY OF SCIENCE

M.Sc. IV – Semester Examination, May / June 2015
Subject: Physics (Electronic Instrumentation Spl.)

Paper – V New / IV Old
Instrumentation for Measurement, Control, Data Acquisition & Data Transmission

Time: 3 Hours
Max. Marks: 80

Note: Answer all questions from Part-A and Part-B.
Each question carries 4 marks in Part-A and 12 marks in Part-B.

PART - A (8x4 = 32 Marks)

1. Distinguish between active and passive transducers
2. Explain the operation of strain gauge load cell
3. Explain the functioning of piezoelectric transducer
4. What is a thermocouple? Explain seebeck effect.
5. What are the main parts of digital data acquisition system?
6. Discuss closed loop control with an example.
7. Write the advantages and disadvantages of land line telemetry
8. Explain the functional blocks of telemetry system.

PART - B (4x12 = 48 Marks)

[Essay Answer Type]

9. a) Discuss in detail different types of variable inductance devices for displacement measurement.
   OR
   b) What is a strain gauge? Derive an expression for gauge factor.

10. a) Explain the working of C-type, spiral and helical type Bourdon tubes for pressure measurement.
     OR
     b) Explain the construction and working of LVDT. Write its advantages and disadvantages.

11. a) Define resolution. Explain the operation of digital to analog multiplexer.
     OR
     b) Explain the interfacing of a transducer with microprocessor with a neat block diagram.

12. a) Explain the multiplexing in telemetering system in detail.
     OR
     b) What is pulse code modulation? Explain pulse amplitude modulation (PAM) telemetry.