

S.B. Roll No.....

**INSTRUMENTATION AND PLCs**  
**5<sup>th</sup> Exam/ECE/ECE-II/1619/0646/May'18**

**Duration: 3Hrs.**

**M.Marks:75**

**SECTION-A**

**Q1. Fill in the blanks.**

**10x1.5=15**

- a. Excitation and amplification systems are needed for \_\_\_\_\_ transducers.
- b. The resistance of a thermistor increases with the \_\_\_\_\_ in temperature.
- c. LVDT can be used to measure \_\_\_\_\_.
- d. The phenomenon by which the quartz crystal is compressed to develop voltage across the ends is called \_\_\_\_\_.
- e. The simple and easy method adopted for isolation is through \_\_\_\_\_.
- f. Galvanometer type recorder operates on the \_\_\_\_\_ principle.
- g. \_\_\_\_\_ counters count from zero up to the present value.
- h. CMRR stands for \_\_\_\_\_.
- i. In small PLCs, the processor, solid-state memory, I/O modules, and power supply are housed in a \_\_\_\_\_ unit.
- j. PLC stands for \_\_\_\_\_.

**SECTION-B**

**Q2. Attempt any five questions.**

**5x6=30**

- i. Draw and explain the block diagram of basic measurement system.
- ii. How the displacement / force can be measured with the help of potentiometric resistance device.
- iii. Describe the principle of electromagnetic flow meter. Give its advantages and disadvantages.
- iv. With the help of diagram explain the working of isolation amplifier.
- v. Explain the memory structure of PLC.
- vi. Describe PLC retentive and delay timer functions.
- vii. Discuss any one application of PLC.

**SECTION-C**

**Q3. Attempt any three questions.**

**3x10=30**

- a. Write down principle of operation, construction and applications of a graphic recorder.
- b. Discuss the limitations of relays and advantages of PLC over electromagnetic relays.
- c. Explain the principle of operation of Resistance hygrometer and its application in measuring the humidity.
- d. Write short note on any two of the followings.
  - i. LVDT
  - ii. Thermistors
  - iii. Thermocouple