NATIONAL INSTITUTE OF TECHNOLOGY, CALICUT
DEPARTMENT OF CHEMICAL ENGINEERING
III YEAR B.TECH CHEMICAL ENGINEERING- SEMESTER-V
Test Series I, Monsoon 2014
CH3004-PROCESS INSTRUMENTATION

Date: 12.09.14 Time: 9.30 – 10.30 am Maximum marks: 15

**Answer the following Questions**
**Missing datas may be suitably assumed**

1. Distinguish between accuracy and precision? Is sensitivity related to precision? (2)

2. A unit step input given to first order instrument induces a response that monastically rises to -6 per cent of the final value of the impressed step value in in 500 ms, obtain the measurement system parameters. If the parameter $\tau$ is halved calculate the per cent improvement in the speed of the response ? (2)

3. A student finds the constant acceleration of a slowly moving object with a stopwatch. The equation used is $s = (1/2)\, at^2$. The time is measured with a stopwatch, the distance, s, with a meter stick.

   $s = 2 \pm 0.005$ meter.
   $t = 4.2 \pm 0.2$ second.

   What is the acceleration and its root square accuracy? (2)

4. Explain the dynamic response of first order instrument with suitable example? (2)

5. Explain dynamic characteristics of an instrument ? (2)

6. Why elastic element type of gauges are preferred for to liquid column manometers in industry? (1)

7. What type of manometer is recommended for measuring a pressure of the inside of reheating furnace? Why? (2)

8. Explain the bourdon tube gauge concept in pressure measurements with a neat sketch. (2)