Roll No. ....

2311

B. E./B. Tech. 6th Semester (ME)

Examination – May, 2014

Measurements and instrumentation

Paper : ME-310 -E

Time : Three hours]   *[Maximum Marks : 100*

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard, will be entertained after examination.

Note : Attempt any *five* questions.

1. (a) What are the functional elements of measurement system ? Explain.   10

   (b) Discuss the classification of instruments in detail. 10

2. An instrument consists of a first order sensing element and a second order data presentation device. The time constant of the first order element is 0.02s and static sensitivity is 7 mV/°C. The second order device has an undamped natural frequency of 80 rad/s and damping ratio of 0.9, with static sensitivity of

5 mm/mV. Draw the Bode diagram, giving the natural frequency response of the system. 20

3. Explain in details the construction working of linear variable differential transducer and vibrating string transducer. 20

4. Write short notes on : 20

    (i) Electrical amplifying elements

    (ii) Data display and storage

    (iii) Filters

5. Explain the construction working of Pneumatic load cell and Torque meter. 20

6. What do you mean by calibration of pressure measuring devices ? Explain the construction working of Rotameter. 20

7. Explain the working of Total radiation Pyrometer. 20

8. Write short notes on : 20

    (a) Methods of least squares

    (b) Central tendency of data

    (c) Measures of dispersions.