DEC-2008

2008-CALICUT UNIVERSITY

B.TECH V SEMESTER DEGREE EXAMINATION

METROLOGY AND INSTRUMENTATION

(MECHANICAL ENGINEERING)

TIME-3HOUR
MARKS-100

ANSWER FULL QUESTIONS

SECTION A 8*5=40 MARKS

I. (a) Explain the systematic and random errors.

(b) Explain the first order response of an instrumentation.

(c) Explain any two primary and secondary transducers.

(d) Explain variable resistance transducers.

(e) Explain complete partial and total immersion thermometers.

(f) Explain about the resistance thermometers in detail.

(g) Explain the method of selecting slip gauges.

(h) Explain the adjustable slip gauge.

SECTION B 4*15=60 MARKS

II. (a) (i) What is the difference between accuracy and uncertainty, precision and accuracy ?

(ii) What is the relationship between sensitivity and range ? What is the disadvantage of very sensitive instruments ?

Or

(b) (i) Explain the following terms: Repeatability, accuracy, precision. Also discuss the relationship of accuracy and cost.

(ii) Why it is essential to be able to determine the degree of uncertainty precise measurements and how same is expressed ?

III. (a) Explain the resistance wire strain gauges and explain any one type of it.

Or

(b) Explain with any one type how the low pressure and high pressure are measured.

IV. (a) Explain the theory and constructional details of magnetic flow meter.

Or

(b) Explain the optical total radiation and photo-electric pyrometers.

V. (a) Describe about image acquisition and digitization and describe about the image processing and analysis.

Or

(b) Explain Tomlinson surface meter and explain the measurement of internal thread.