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Name....................................

Reg. No...............................
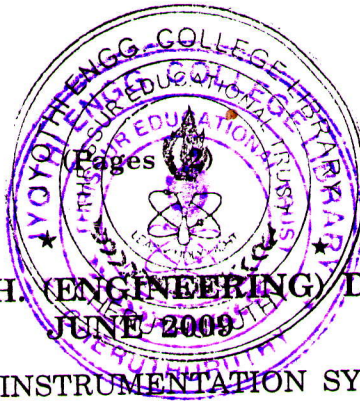
EIGHTH SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION JUNE 2009

EE 04 803—INSTRUMENTATION SYSTEMS

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all the questions.

1. Explain the torque transducer.

2. What is the effect of temperature changes on a strain gauge ? Distinguish between bounded and unbounded strain gauge.

3. Explain with neat diagram, the AC Bridge with push–pull amplifier.

4. What is the universal counter ? How it can be used for measure the following :

   (a) Frequency, (b) Time, (c) Period.

5. What is the primary function of galvanometer type recorder ? Explain.

6. Explain the statistical analysis of the measurement system.

7. What is data acquisition system ? What are the objectives of the DAS ? Explain.

8. Explain the transfer function of the second order system.

(8 × 5 = 40 marks)

Part B

9. Describe the operation of different type of strain gauges.   (15 marks)

Or

10. Explain the operation of the following :

    (a) Velocity transducer.

    (b) Force transducer.

    (c) Accelerometer.

(15 marks)

11. Briefly explain the differential amplifier with their advantages and disadvantages.   (15 marks)

Or

12. Describe the DVM using successive approximation method.   (15 marks)

13. Explain the Pen driving system with neat diagram.   (15 marks)

Or

14. Describe the operation of digital taperecording with neat diagram.   (15 marks)

Turn over

15. Discuss the Data acquisition system with operation, and also explain the various configuration used in the Data acquisition system.

(15 marks)

Or

16. (a) Explain the frequency response for the first order system. (10 marks)

(b) A first order system is to measure signals with frequency content upto 100 MHz with an amplitude in accuracy of 5%. What is the maximum allowable time constant ? What will be the phase shift at 50 Hz ?

(5 marks)

[4 × 15 = 60 marks]