Name : .....

Roll No. : .....

Invigilator's Signature : .....

CS/M.TECH (CT)/SEM-1/M(CT)-105/2010-11

2010-11

ELECTRONIC INSTRUMENTATION

Time Allotted : 3 Hours *Full Marks* : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable.

Answer any *five* questions. 5 ∞ 14 = 70

1. a) What is the function of ammeter ? Explain with diagram the working principle of a moving iron ammeter. 1 + 5

   b) What is the basic difference between moving iron and moving coil based meters ? 4

   c) A moving coil ammeter reads upto 10 amperes when it has a resistance of 0·2 ohm. How the ammeter can be used to read current up to 100 amperes ? 4

2. a) What are the properties used for an electronic voltmeter ? 3

b) Explain the working principle of an electronic meter with diagram. 7

c) What is watt-hour-metre ? 2

d) Why is LCR meter used ? 2

3. a) What is the purpose of an oscilloscope ? 3

b) Describe the working principle of an oscilloscope with block diagram. 8

c) Describe the function of control grid of a Cathode Ray Tube. 3

4. a) Describe SAR method of A/D conversion with diagram. 6

b) Describe with diagram a 4-bit D/A converter. 5

c) What is shift register and why are they used ? 3

5. a) What are the types of flip-flops ? Describe any one flip-flop. 2 + 5

b) What are the features of an Op-Amp ? 3

c) How an Op-Amp can be used as voltage comparator ? 4

6. a) What is seven segment display and how the segments can be illuminated of a seven segment display using decoder ? 2 + 5

b) What is the function of a Decade Counter ? Describe a Decade Counter with diagram. 2 + 5

7. a) Describe the basic elements of a Microprocessor based system. 5

   b) What are the features of a Microcontroller ? 4

   c) Justify the uses of Microprocessor based system and Microcontroller based system. 5

8. Describe with diagram the Microprocessor based Temperature Controller of a furnace.