

GUJARAT TECHNOLOGICAL UNIVERSITYM. E. IST Semester–Remedial Examination – July- 2011**Subject code: 713101N****Subject Name: Medical System Design****Date:07/07/2011****Time: 10:30 am – 01:00 pm****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

- Q.1** (a) Describe the input guarding for the Op-Amp. List out the characteristic of ideal Op-Amp. **07**
 (b) Explain the skin effect with reasoning and neat diagrams. **07**

- Q.2** (a) Enlist the steps to design transformer for forward converter. **07**
 (b) Explain the signal conditioning of resistive temperature element for temperature up to 500⁰ C with neat sketch. **07**

OR

- (b) Explain the signal conditioning required for measurement of flow (Assume suitable data). **07**

- Q.3** (a) Explain the sample and hold circuit with necessary sketches and derivations. **07**
 (b) What are the different window utilization factors? Explain hysteresis loss with neat sketch. **07**

OR

- Q.3** (a) Explain electromagnetic flow meter with neat sketch. **07**
 (b) Explain measurement of conductivity with neat block diagram. **07**

- Q.4** (a) Explain LVDT with neat diagram, derivations and limitations. **07**
 (b) Give the design steps of multi channel Data Acquisition System. **07**

OR

- Q.4** (a) Give the design of precise ac current source with neat sketches. **07**
 (b) Explain forward converter with neat waveforms, diagrams and importance of demagnetising winding. **07**

- Q.5** (a) Explain any one method for vibration measurement. Give the consideration of vibration in medical system design. **07**
 (b) Explain strain gauge with necessary equations and sketches. **07**

OR

- Q.5** (a) Design a power supply with following specifications: **07**
 Input voltage- 230V ± 20%, Input current 5Amp.maximum,
 Output Voltage- 15 V, Output Current- 2 A
 (b) What do you mean by surge current?. Explain the circuit protection against the surge current. **07**
