

BITS PILANI DUBAI CAMPUS  
KNOWLEDGE VILLAGE, DUBAI

IV Year EEE&EIE – II Semester 2005-06  
Comprehensive Exam  
MEDICAL INSTRUMENTATION  
(EEE UC432/INSTR UC481)

Date: 29/05/06  
Max. Marks: 50

Time: 3 Hrs  
Weightage: 40%

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Answer ALL Questions

1. (a) What are the different characteristics of blood flow. (5M)  
(b) Explain the different heart sounds and their significance. (5M)
  
2. (a) Briefly explain any TWO types of ECG recorders. (5M)  
(b) Discuss impedance plethysmography in detail. (5M)
  
3. (i) What is fibrillation. (2M)  
(ii) Explain a dc defibrillator showing the circuit and the discharge wave form. (5M)  
(iii) Differentiate between A-scan and M-scan displays. (3M)
  
4. (a) If the same neuronal spike were measured intracellularly and extra cellularly, what would be the difference between the two measurements. (5M)  
(b) Show the block diagram of a device that allows simultaneous measurement of BSR and GSR. Explain. (5M)
  
5. (a) Give the block diagram of a biotelemetry transmitter and explain. (5M)  
(b) Write short note on diagnostic X-rays. (5M)

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IV Year EEE&EIE – II Semester 2005-06  
Test2 (Open Book)  
MEDICAL INSTRUMENTATION  
(EEE UC432/INSTR UC481)

Date: 23/04/06  
Max. Marks: 20

Time: 50mts  
Weightage: 20%

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Answer ALL Questions

1. (a) What are the bandwidth requirements for measuring blood pressure. (2M)  
(b) How is venous blood pressure measured. (2M)
  
2. What are the factors that can cause error while measuring blood flow using electromagnetic flow meters. (4M)
  
3. What is the difference between a bouncing ball and non fade display. Discuss their relative merits. (4M)
  
4. Suggest a pace maker for patients who require cardiac pacing intermittently. Explain the same. (4M)
  
5. Define the different respiratory volumes and capacities used to understand pulmonary functions. (4M)

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IV Year EEE&EIE – II Semester 2005-06  
Test I  
MEDICAL INSTRUMENTATION

Date: 5/03/06  
Max. Marks: 40

Time: 50mts  
Weightage: 20%

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Answer ALL Questions

- 1 (a) What is the effect of the transducer on the measurement of a living system. (6M)
- (b) Explain the different components of a man instrument system. (4M)
  
2. Explain in detail the following transducers for biomedical applications
  - (i) Force (5M)
  - (ii) Pressure (5M)
  
3. (a) Explain how resting and action potentials are generated. (4M)
- (b) How does action potential propagate. (3M)
- (c) Draw ECG waveform and explain how it is generated. (3M)
  
4. Explain the following.
  - (i) Electrodes used to measure bioelectric potential in a single cell. (5M)
  - (ii) Electrodes used to measure ECG. (5M)