

Total number of printed pages – 4

B. Tech
PEBM 8401

Seventh Semester Examination – 2006

**BIO-MEDICAL INSTRUMENTATION AND
MEASUREMENT**

Full Marks – 70

Time : 3 Hours

IWL

*Answer Question No. 1 which is compulsory
and any **five** from the rest.*

*The figures in the right-hand margin
indicate marks.*

1. Answer the following questions : 2×10

- (a) What is biometrics ?
- (b) What is bioelectric potential ?
- (c) What is the function of an electrode ?

P.T.O.

- (d) A RR interval of a ECG recorder with a paper speed of 50mm/s is 48mm. What is the pulse rate ?
- (e) Which particle in blood is of larger size and which is of higher number ?
- (f) Which are the principal ions responsible for excitation of a cell ?
- (g) For what measurement can a spirometer be used ?
- (h) What is meant by mean arterial pressure ?
- (i) What do you understand by the term "noninvasive methods"?
- (j) What is the difference between in vivo and in vitro measurement ?

2. Give the functional block diagram of an ECG instrument and give the function of each block in brief. 5+5

3. Explain an instrument, which measures the blood pressure of a human body. 10
4. What is the basic principle of CAT scan instrument ? What modifications are done in fourth generation instrument from first generation one ? 5+5
5. Name three basic types of electrodes for measurement of bioelectric potentials. What do you understand by the term "reference electrode" ? What is the major advantage of floating type skin surface electrodes ? 3+3+4
6. Explain the technique of thermography. Comment on its usefulness. 5+5
7. What are the basic modes of transmission of ultrasound ? Describe each briefly. 5+5

IWL

8. ✓ Write short notes on :

2.5×4

- (a) Electromyogram
- (b) Problems encountered in measuring a living system
- (c) Ph - electrodes
- (d) Thermometer.

IWL