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B. Tech
PEBM 8401

Seventh Semester Examination – 2006

BIO-MEDICAL INSTRUMENTATION AND
MEASUREMENT

Full Marks – 70

Time : 3 Hours

*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

✓ 8. Write short notes on :

2.5×4

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