B.E. Instrumentation Engineering Sixth Semester

IN602 - Bio-Medical Instrumentation Paper-I

P. Pages : 2 **GUG/W/18/1708**

Time : Three Hours * 1 3 4 2 * Max. Marks : 80

Notes : 1. Same Answer book must be used for each section.
2. All questions carry marks as indicated.
3. Due credit will be given to neatness and adequate dimensions.
4. Assume suitable data wherever necessary.
5. Diagrams and Chemical equation should be given wherever necessary.

1. a) Elaborate the origin and conduction of heart beat. **8**

b) List different types of blood pressure measurement. Explain any one in detail. **8**

OR

2. a) Evaluate the physiology of blood clotting in human anatomy. **8**

b) Define ECG? Justify the Evoked response of ECG with neat sketch. **8**

3. a) Enlist the general constraints in design of medical instrumentation system. **8**

b) Discuss medical instrumentation system and Regulation act of medical devices. **8**

OR

4. a) Enlist different sources of biomedical signals explain it. **8**

b) Describe intelligent medical instrumentation in details. **8**

5. a) Write a short note on following sensors. **8**

i) Electrochemical sensor.

ii) Chemical Fibro sensor.

b) Carry out the procedure of calculating heart & pulse rate. **8**

OR

6. a) State the origin of bioelectric signal with typical cell potential waveform. **8**

b) Illustrate the measurement technique for blood PH, blood Pco_2 and blood Po_2. **8**

7. a) Analyze the real time bioelectric signals. **8**
i) ECG
ii) VCG
iii) PCG.

b) Demonstrate the sources of noise in low level measurement for biopotential. **8**

OR

8. a) Describe the need of pre-amplifier in the recording system with suitable example. **8**

b) Enlist the general consideration for design of signal conditioner for biopotential measurement. **8**

9. a) Sketch & explain the various components used in spectrophotometer. **8**

b) Illustrate the use of Pacemaker & Defibrillator in critical care unit. **8**

OR

10. a) Examine the bio parameter using medical diagnosis with chemical test. **8**

b) Describe Automated Biomechanical analysis system. **8**

****