

Faculty of Engineering & Technology
Seventh Semester B.E. (Electronics Engg.)
(C.B.S.) Examination

ELECTIVE-I : BIOMEDICAL INSTRUMENTATION

Time—Three Hours]

[Maximum Marks—80

INSTRUCTIONS TO CANDIDATES

- (1) All questions carry marks as indicated.
- (2) Solve Question No. **1** OR Questions No. **2**.
- (3) Solve Question No. **3** OR Questions No. **4**.
- (4) Solve Question No. **5** OR Questions No. **6**.
- (5) Solve Question No. **7** OR Questions No. **8**.
- (6) Solve Question No. **9** OR Questions No. **10**.
- (7) Solve Question No. **11** OR Questions No. **12**.
- (8) Due credit will be given to neatness and adequate dimensions.
- (9) Illustrate your answers wherever necessary with the help of neat sketches.

10. (a) Compare :
- (i) X-Ray
 - (ii) CT-Scanning
 - (iii) MRI and
 - (iv) Ultra Sound. 8
- (b) Explain the basic principle of Nuclear Magnetic Resonance. 5
11. (a) What do you mean by Electric Shock Hazards ? Explain. 7
- (b) Explain leakage currents in Biomedical Instrumentation System. 6

OR

12. (a) Explain safety code for Electrical Equipments. 7
- (b) Explain safety analyzers in Biomedical Instrumentation. 6

1. (a) What are the various Physiological Systems of the body ? Explain. 7
- (b) What are the various Bioelectric Signals ? Explain with Waveforms. 7

OR

2. (a) Explain basic block diagram of Biomedical Instrumentation System. 7
- (b) Explain the origin of Biomedical Signal. What are the limitations of Biomedical Instrumentation System ? 7
3. (a) What is the significance of position and motion transducer in Biomedical Instrumentation ? Explain with suitable diagram. 8
- (b) Explain the transducer used for the measurement of human body temperature. 6

OR

4. (a) Explain Biosensor used in Biomedical Instrumentation System. 7
- (b) Explain Photoelectric transducer with suitable diagram. 7

5. (a) Explain with block diagram basic principle and working of Biomedical recorders. 7
- (b) Explain working principle of ECG. What are the preventive measures required while doing ECG. 6

OR

6. (a) For which diagnosis phonocardiograph is used ? What are its limitations ? 7
- (b) Explain with suitable diagram working of Electromyograph. 6
7. (a) How Heart-rate can be measured ? Explain with diagram. 7
- (b) Explain measurement of pulse rate with suitable diagram. 6

OR

8. (a) Explain the measurement of respiration rate with diagram. 7
- (b) Explain central monitors with diagram. 6
9. (a) Explain production of x-ray. What are the limitations of x-ray machines. 7
- (b) Explain system components of CT-Scan. 6

OR