

No. of Printed Pages : 03

Roll No.

G-3

B. Tech. EXAMINATION, May 2017

(Seventh Semester)

(Electives) (Re-appear Only)

(Common for All Branches)

BME-451-B

MEDICAL INSTRUMENTATION

Time : 3 Hours]

[Maximum Marks : 75

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt any *Five* questions. All questions carry equal marks.

1. (a) Explain with neat sketch anatomy and physiology of central nervous and peripheral nervous system. 7

(2-46/9) M-G-3

P.T.O.

- (b) Draw only diagrams, illustrating the process of respiration and circulation. **8**
- 2.** (a) Describe the generation and features of action potential and resting potential. **7**
- (b) What are the requirements of a good physiological transducers and explain the operation of any *two* types of physiological transducers with relevant sketches ? **8**
- 3.** (a) Explain the Fick's method for cardiac output measurements. **7**
- (b) Sketch the 10:20 electrode placement system for EEG. **4**
- (c) What is the frequency range of ECG, EEG, and EMG waves ? **4**
- 4.** (a) Discuss the need for various types of electrodes for measuring bio-potentials. **7**
- (b) Describe in detail about the basic components of a biomedical system. **8**

M-G-3

2

- 5.** Write short notes on any *three* of the following :
- (a) Fluoroscopic technique **5**
- (b) X-rays generation **5**
- (c) Magnetic Resonance imaging **5**
- (d) Thermography. **5**
- 6.** (a) What is Biotelemetry ? **5**
- (b) What is the principle of medical ultrasound ? **5**
- (c) What are the different biological effects of X-rays ? **5**
- 7.** (a) Explain the working of a DC defibrillator with a neat block diagram. **7**
- (b) Explain the working of heart-Lung machine. **8**
- 8.** (a) Explain the working principle of surgical diathermy unit with a neat block diagram. **8**
- (b) Explain the principle of working of Ventilators. **7**

(2-46/10) M-G-3

3

20