

A

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 55503

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2018

Fifth Semester

Electronics and Instrumentation Engineering

15UEI503 - BIOMEDICAL INSTRUMENTATION

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

PART A - (10 x 1 = 10 Marks)

1. The recorded representation of bioelectric potentials generated by the neuron activity of the brain is called the CO1- R
(a) ECG (b) EEG (c) EMG (d) ERG
2. _____ electrode is used for the measurement of more than one ions present in the physiological measurement. CO1- U
(a) Glass (b) Micro
(c) Body surface (d) Specific ion
3. The Lead vector for lead I, II, III in ECG is CO2- U
(a) 0, 60, 120 Deg (b) 30, 60, 0 Deg (c) 0, 30, 60 Deg (d) 30, 60, 90 Deg
4. The amplitude of EEG is approximately around _____ micro V. CO2- R
(a) 10 (b) 20 (c) 30 (d) 100
5. Which one of the following condition will not a cause of respiratory alkalosis? CO3- R
(a) Fever (b) Anxiety
(c) Laryngeal obstruction (d) Salicylate toxicity

6. Homeostatic regulation of the cardiovascular system is designed to maintain _____ CO3- R
- (a) Constant blood volume (b) Constant arterial blood pressure
- (c) Constant cardiac output (d) Constant venous blood pressure
7. If the defibrillator detects fibrillation, the capacitors with the device charged up to ___ CO4- R
- (a) 100 V (b) 250 V (c) 375 V (d) 750 V
8. In chassis leakage current measurement, the capacitor is employed to imitate the sensitivity of the heart as a function of _____ CO4 -R
- (a) Current (b) Voltage (c) Frequency (d) Power
9. Which of the following is not a factor determining spatial resolution? CO5 -R
- (a) Frequency (b) Transmit intensity (c) Pulse interval (d) Acquisition
10. Which imaging technique uses sound waves to bounce off tissues and reflect back to a transducer? CO5- R
- (a) Computed Tomography (CT) (b) Biophotonics
- (c) Positron Emission Tomography (PET) (d) Ultrasound

PART – B (5 x 2= 10Marks)

11. Differentiate between polarisable and non-polarisable electrodes. CO1 -Ana
12. List the different types of needle electrode. CO2- R
13. Define cardiac output. CO3- R
14. Define defibrillator analyzers. CO4- R
15. Analyze the biological effects of NMR imaging. CO5-Ana

PART – C (5 x 16= 80Marks)

16. (a) Explain in detail about the electrical activities associated with bioelectric signals. CO1- App (16)
- Or
- (b) (i) Explain the isolation amplifier with circuit schematic. CO1- U (8)
- (ii) Differentiate between resting and action potential. CO1- Ana (8)
17. (a) Explain the electrode configuration, recording methods and waveforms of ECG. CO2- App (16)
- Or
- (b) Illustrate the 10-20 lead configuration measurement of EEG measurement, with neat sketch CO2 -Ana (16)
18. (a) Illustrate the any two methods of respiratory rate measurement CO3 -Ana (16)
- Or
- (b) Explain the any two methods of blood pressure measurement. CO3 -Ana (16)
19. (a) Explain the working of Heart – Lung machine CO4 U (16)
- Or
- (b) Analyze the physiological effects of electric current on human body. CO4 -Ana (16)
20. (a) Explain in detail about Computer Tomography with neat sketch. CO5- U (16)
- Or
- (b) Illustrate the multi channel telemetry of ECG and respiration. CO5- U (16)

