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Question Paper Code: 59422A

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Elective

Electronics and Communication Engineering

15UEC922- MEDICAL ELECTRONICS

(Regulation 2015)

Duration: One hour

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. The term Nerve conduction rate is related to _____ CO1- R
(a) Acceleration (b) Conduction velocity
(c) Potential velocity (d) None of the above
2. Among the following electrodes, which have high Zi? CO1- R
(a) Surface electrodes (b) Needle electrodes (c) Micro electrodes (d) Disc electrodes
3. Relaxation and contraction of heart muscle is called CO2- R
(a) Systole, Diastole (b) Diastole, Systole
(c) Hematocrit determination (d) LBC
4. Blood flow can be measured using the electromagnetic principle because blood has a high CO2- R
(a) Magnetic induction (b) Electrical resistivity
(c) Electrical conductivity (d) Impedance
5. The polymeric material used for the preparation of artificial heart valve is CO3- R
(a) polyvinyl chloride (b) Teflon (c) Polyisopropyl (d) polyethylene

6. To produce ventricular contraction with an electric pulse, the minimum energy required is CO3- R
- (a) $10\mu\text{J}$ (b) 1J (c) 10mW (d) 1W
7. Among the following imaging system, which has more noninvasive character? CO4- R
- (a) Ultrasonic imaging system (b) CT imaging system
(c) Nuclear imaging system (d) PET systems
8. The time taken by ultrasonic wave to travel through a soft tissue of thickness 7cm and back when they are moving through it with a velocity 1540 m/s is CO4- R
- (a) $45.45\mu\text{s}$ (b) $215.6\mu\text{s}$ (c) $90.91\mu\text{s}$ (d) $4.55\mu\text{s}$
9. All apparatus in contact with a patient during cardiac catheterization must be designed to prevent ----- CO5- R
- (a) leakage current (b) grounding (c) macro shock (d) virus infection
10. The Let-go current for men is about _____ CO5- R
- (a) 10mA (b) 10.5mA (a) 10mA (b) 10.5mA

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Discuss the genesis of ECG and explain the working of an ECG machine with suitable block diagram along with its various lead configurations. CO1- U (8)
12. Explain the block diagram and working of colorimeter CO2-U (8)
13. With a neat diagram explain the block diagram of arterial and ventricular triggered pacemaker. CO3-U (8)
14. What is meant by radiography? Explain in detail about the process of medical imaging with the help of computed radiography CO4- U (8)
15. Discuss in detail about applications of LASER in medicine. CO5- U (8)