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Question Paper Code: 59422

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2022

Elective

Electronics and Communication Engineering

15UEC922–MEDICAL ELECTRONICS

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

- _____ is the study of electrical activity of the brain. CO1- R
(a) ECG (b) EMG (c) EEG (d) PCG
- What is the pH value of the solution when the hydrogen concentration in the solution is $10^{-7.6}$ mol/L CO2- R
(a) 7.6 (b) -7.6 (c) 7.5 (d) 7.7
- The electrodes used in internal pacemakers are called as ___ electrodes CO3- R
(a) Myocardiac (b) Endocardiac (c) Bipolar (d) Unipolar
- Name the technique that uses sound waves to produce image. CO4- R
(a) Computed radiography (b) Computer tomography
(c) Magnetic resonance imaging (d) Ultrasonography
- In medicine, _____ displays images representing the thermal radiation of skin areas. CO5- R
(a) Tomography (b) Thermography (c) Sonography (d) Radiography

PART – B (5 x 3= 15Marks)

- What is meant by resting potential? CO1- R
- Explain in brief the methods measurement of blood pressure. CO2- R
- State the advantages of biotelemetry. CO3- R

9. Compare MRI and CT scan. CO4 -R
10. In surgical diathermy machine explain the effect of voltage applied when it is less than 200Vp CO5- R

PART – C (5 x 16= 80 Marks)

11. (a) With diagram, explain the different lead configurations and its significances in ECG CO1- U (16)
- Or
- (b) Explain the block diagram of PCG recording system and brief about the types of microphones used in PCG. CO1- U (16)
12. (a) Explain the thermo dilution method and Fick's method of cardiac output measurement. CO2- U (16)
- Or
- (b) Discuss the application of Faraday's principle in blood flow meters in detail and also state the advantages of square wave EM blood flow meter over sine wave flow meter. CO2- U (16)
13. (a) Identify and explain the working of the device that is used immediately after finding a patient experiencing a cardiac emergency, has no pulse, and unresponsive. CO3- U (16)
- Or
- (b) Explain the construction and working of radio-pill in detail. CO3- U (16)
14. (a) What are the various imaging modes found in ultra sound systems? Explain A-mode scanning and B-mode scanning in detail with a neat block diagram CO4- U (16)
- Or
- (b) Explain the functioning of magnetic resonance imaging systems. CO4- U (16)
15. (a) Explain the block diagram of electrosurgical diathermy. CO5 U (16)
- Or
- (b) Explain the working principle of positron emission tomography. CO5 U (16)