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**Question Paper Code: 59422**

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

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)

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. The range of systolic blood pressure for a normal adult is \_\_\_\_\_ CO2- R  
(a) 95 to 145 mm Hg (b) 75 to 135 mm Hg  
(c) 55 to 125 mm Hg (d) 65 to 125 mm Hg
3. The batteries used for implantable pacemakers are \_\_\_\_\_ CO3- R  
(a) Mercury cell (b) Lithium cell (c) Nuclear cell (d) All the above
4. \_\_\_\_\_ is the treatment process by which, cutting coagulation of tissues are obtained. CO4- R  
(a) Thermography (b) Diathermy (c) Endoscope (d) Dialysis
5. The Let-go current for men is about \_\_\_\_\_ CO5- R  
(a) 10mA (b) 10.5mA (c) 16mA (d) 22mA

PART – B (5 x 3= 15Marks)

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|-----|--|--------|
| 6.  | Define absolute and relative refractory period.            | CO1- R |
| 7.  | Define cardiac output. Mention its abnormal categories.    | CO2- R |
| 8.  | Distinguish between internal and external pacemaker.       | CO3- R |
| 9.  | What is radio pill? Mention the application of radio pill. | CO4- R |
| 10. | Mention few applications of LASER in medicine.             | CO5- R |

PART – C (5 x 16= 80Marks)

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|-----|--|----------|------|
| 11. | (a) Discuss the genesis of ECG and explain the working of an ECG machine with suitable block diagram along with its various lead configurations. | CO1- App | (16) |
|     | Or   |          |      |
|     | (b) What is known as biopotential electrodes? Draw its equivalent circuit and explain various types of biopotential electrodes.                  | CO1- App | (16) |
| 12. | (a) (i) Describe the measurement of PO <sub>2</sub> .  | CO2-U    | (8)  |
|     | (ii) Explain the block diagram and working of colorimeter.   | CO2-U    | (8)  |
|     | Or   |          |      |
|     | (b) (i) State and explain the working principle of electromagnetic blood flow meter.   | CO2-U    | (8)  |
|     | (ii) Briefly explain the working of Blood cell counter.  | CO2-U    | (8)  |
| 13. | (a) With a neat diagram explain the block diagram of arterial and ventricular triggered pacemaker.   | CO3-U    | (16) |
|     | Or   |          |      |
|     | (b) Describe the single channel ECG telemetry system and its applications.   | CO3-U    | (16) |
| 14. | (a) What is meant by radiography? Explain in detail about the process of medical imaging with the help of computed radiography.                  | CO4- U   | (16) |
|     | Or   |          |      |
|     | (b) Explain in brief about the magnetic resonance imaging with a neat sketch.  | CO4- U   | (16) |

15. (a) Explain the infrared thermographic instrumentation with a suitable block diagram and what are its different medical applications. CO5- U (16)

Or

- (b) Define tomography. Explain the various tomographic techniques available with the help of suitable diagrams. CO5- U (16)

