

Reg. No.

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B.E. / B.TECH. DEGREE EXAMINATIONS, DEC 2019

Fifth Semester

EC16001 – MEDICAL ELECTRONICS*(Electronics and Communication Engineering)***(Regulation 2016)****Time: Three Hours****Maximum : 100 Marks**

Answer ALL questions

PART A - (10 X 2 = 20 Marks)

	CO	RBT
1. Define absolute and relative refractory period.	1	R
2. Differentiate Polarized and non-Polarized electrodes.	1	U
3. Determine the cardiac output, if heart rate is 75 bpm and stroke volume is 70ml.	2	AP
4. How is auto analyzer useful in medical field?	2	U
5. Draw the defibrillator output waveform and indicate the output energy level.	2	U
6. What is the principle of Hemodialysis?	2	U
7. Define micro and macro shock.	3	R
8. What are ionizing and non-ionizing radiations?	3	R
9. List out the properties of LASER.	3	R
10. What is meant by radio pill?	3	R

PART B - (5 X16 = 80 Marks)

11. (a) (i) Describe the 10-20 electrode system used in EEG measurement. **(8)** **1** **U**
- (ii) Explain the desirable characteristics of a biological amplifier and describe the operation of instrumentation amplifier with a neat circuit diagram. **(8)** **1** **U**
- (OR)**
- (b) (i) Explain the international standard 12 lead system used to record ECG waveform. **(8)** **1** **U**
- (ii) Describe the typical EMG waveform and its characteristics. **(8)** **1** **U**

12. (a) (i) How is cardiac output measured by the dye dilution technique? (8) 2 R
Explain the method of measurement.
- (ii) Describe the working of Coulter counter method of counting (8) 2 R
blood cells.

(OR)

- (b) (i) State and explain the working principle of Electromagnetic (8) 2 R
blood flow meter.
- (ii) Describe the auscultatory blood pressure measurement. (8) 2 R

13. (a) With neat diagrams, explain the working of various types of (16) 2 U
pacemakers.

(OR)

- (b) Explain the heart lung machine with neat block diagram and describe (16) 2 U
the various types of oxygenators.

14. (a) Explain the impact of leakage current in patients and discuss about (16) 3 U
its physiological effects and suitable prevention methods.

(OR)

- (b) Explain the principle involved in various types of diathermy. (16) 3 U

15. (a) (i) Discuss the benefits and limitations of Tele-medicine. (8) 3 U
- (ii) What is cryogenics? List some cryogenic agents with its (8) 3 U
operating temperature and explain how it is used to perform
surgery.

(OR)

- (b) (i) Draw the basic setup of a medical thermography unit and (8) 3 U
explain the function of each unit in it.
- (ii) Explain the different blocks of an endoscopy unit & discuss its (8) 3 U
applications.