

G 424

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Reg. No.....

Name.....

B.TECH. DEGREE EXAMINATION, MAY 2014**Sixth Semester**

Branch : Electronics and Communication Engineering

EC 010 606 L04 – MEDICAL ELECTRONICS (Elective) (EC)

(New Scheme – 2010 Admission onwards)

[Regular/Improvement/Supplementary]



Time : Three Hours

Maximum : 100 Marks

Part A*Answer all questions.**Each question carries 3 marks.*

1. Name important parts of human circulatory system.
2. What is phonocardiography?
3. Explain the role of a pre-amplifier in a biomedical recording system.
4. What is input guarding? Explain.
5. Discuss how imaging methods helps in diagnosis and treatment of different diseases.

(5 × 3 = 15 marks)

Part B*Answer all questions.**Each question carries 5 marks.*

6. Explain the characteristics of Ag-AgCl electrodes.
7. Describe the need and use of cardiac pacemakers.
8. What is telemetry? How it is employed in biomedical field?
9. Explain the operation of a Ventilator.
10. Describe the basic principle of ultra sound imaging.

(5 × 5 = 25 marks)

Turn over

**Part C**

Answer all questions.

Each full question carries 12 marks.

11. (a) Sketch the waveform corresponding to the action of a muscle cell and explain its shape corresponding to the action of the cell.
(b) Explain the working of EMG electrodes with neat sketches.

(6 + 6 = 12 marks)

Or

12. (a) Explain the need of jellies and creams with electrodes to measure the bio-electric potential.
(b) Describe the working of different transducers used for the measurement of body temperature.

(4 + 8 = 12 marks)

13. (a) What is the normal value of BP in a healthy human being. Explain the state of hypo and hypertension.
(b) Describe the direct method of BP measurement.

(4 + 8 = 12 marks)

Or

14. (a) Explain the concept of Einthoven triangle in ECG measurement.
(b) Describe the following methods used for the measurement of cardiac output :
(i) Dye dilution method.
(ii) Indicator dilution method.

(4 + 8 = 12 marks)

15. Explain the following :

- (a) EEG frequency bands.
(b) EEG electrodes.
(c) EEG recorder.

(12 marks)

Or

16. Describe the following in detail :

- (a) Bed side monitoring system.
(b) Cardiac tachometer.

(12 marks)



17. (a) Explain the principle and working of electromagnetic blood flow meter.
(b) Describe the working of laser doppler blood flow meter with neat block diagram.

(6 + 6 = 12 marks)

Or

18. (a) With block diagram, explain the optical method of blood cell counting.
(b) Describe the method of measurement of pH value of blood.

(8 + 4 = 12 marks)

19. (a) Describe the basic principle of C.T.
(b) Name the four sub systems in a CT system and explain each one in detail.

(4 + 8 = 12 marks)

Or

20. (a) With block diagram, explain a pulse-echo system used in medical ultrasound equipments.
(b) Explain the following :
(i) Multi-element linear array scanners.
(ii) Phased array scanners.

[5 × 12 = 60 marks]