

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0423]

APRIL 2023

Sub. Code: 1510

**B.Sc. CARDIAC TECHNOLOGY
FIRST YEAR (Regulations 2014-2015, 2018-2019 & 2021-2022 onwards)
PAPER III – MEDICAL ELECTRONICS, BIOPHYSICS AND COMPUTER
USAGE RELEVANT TO CARDIAC TECHNOLOGY AND
BASIC ELECTROCARDIOGRAPHY**

Q. P. Code: 801510

Time: Three hours

Maximum : 100 Marks

Answer ALL Questions

I. Elaborate on: (3 x 10 = 30)

1. Discuss in detail about the techniques for Monitoring Radiation Exposure.
2. Explain the uses of Defibrillators and its functions.
3. What is Ultrasound Waves and write its application in Medicine?

II. Write notes on: (8 x 5 = 40)

1. Describe about impedance Plethysmography.
2. What are the procedures to be done in Catheterization lab?
3. What is Pulse oximeter and explain its types.
4. Explain the types of waves in ECG.
5. What is Pre-cordial chest leads?
6. How defibrillator restores the normal rhythm of heart?
7. What is bio-impedance signal?
8. Explain the types of ECG tests.

III. Short answers on: (10 x 3 = 30)

1. Define ALARA.
2. Properties of X-rays.
3. Computer use in Medical care.
4. Atrial repolarization.
5. Piezo-electric effect.
6. Define Radiation.
7. Ionization.
8. C-arm Fluoroscopy.
9. U wave.
10. Mean arterial pressure.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1123]

NOVEMBER 2023

Sub. Code: 1510

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR (Regulations 2014-2015, 2018-2019 & 2021-2022 onwards)

PAPER III – MEDICAL ELECTRONICS, BIOPHYSICS AND COMPUTER

USAGE RELEVANT TO CARDIAC TECHNOLOGY AND

BASIC ELECTROCARDIOGRAPHY

Q. P. Code: 801510

Time: Three hours

Maximum : 100 Marks

Answer ALL Questions

I. Elaborate on: **(3 x 10 = 30)**

1. Explain about the measures taken to reduce radiation in Cath lab.
2. Describe about augmented Limb leads.
3. Explain the preparation and procedure for paediatric ECG.

II. Write notes on: **(8 x 5 = 40)**

1. Methods of monitoring oxygen saturation in pulse oximeter.
2. Biological effects of Radiation.
3. Principle of Electrocardiography.
4. Uses of Computer in Medical Care.
5. Working of CRT.
6. Draw Electrode positions in ECG.
7. How to assess the axis in ECG?
8. Write the causes of left axis deviation.

III. Short answers on: **(10 x 3 = 30)**

1. Piezo-electric crystal.
2. Doppler ultrasound.
3. Isoelectric complex.
4. Transducer.
5. T-wave.
6. Depolarization.
7. Types of Radiation.
8. Properties of X-rays.
9. Einthoven triangle.
10. How to calculate PR interval?

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 0424]

APRIL 2024

Sub. Code: 1510

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR (Regulations 2014-2015, 2018-2019 & 2021-2022 onwards)

**PAPER III – MEDICAL ELECTRONICS, BIOPHYSICS AND COMPUTER
USAGE RELEVANT TO CARDIAC TECHNOLOGY AND
BASIC ELECTROCARDIOGRAPHY**

Q. P. Code: 801510

Time: Three Hours

Answer All questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Discuss in detail about definition, normal value, pulse pressure and measurement of Blood pressure.
2. 21 year old Cardiac technology student works in cath lab. The next day he has skin rashes. What could be the cause? How can he prevent the hazards?
3. Draw a normal ECG. Discuss in detail the various waves, segments and intervals in a normal ECG. Add a note on axis of the heart.

II. Write notes on:

(8 x 5 = 40)

1. Methods of calculating heart rate in ECG.
2. ECG features of LVH.
3. Augmented limb leads.
4. Definition and application of Ultrasound in Cardiology.
5. Uses of Defibrillator.
6. Techniques of monitoring Radiation exposure.
7. Application of Computers in medical care and data entry.
8. Conduction system of the heart.

III. Short answers on:

(10 x 3 = 30)

1. Define Acoustic impedance.
2. What is Piezo-electric effect?
3. State the meaning of Asynchronized defibrillation.
4. List any three uses of MS word.
5. Define the premature ventricular complex in ECG.
6. Define Resting membrane potential.
7. List the parts of a Computer.
8. Specify the Colour coding for limb leads.
9. State the Einthoven triangle.
10. Define the Inverse square law.

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

[AHS 1125]

NOVEMBER 2025

Sub. Code: 1510

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR (Regulations 2014-2015, 2018-2019 & 2021-2022 onwards)

**PAPER III – MEDICAL ELECTRONICS, BIOPHYSICS AND COMPUTER
USAGE RELEVANT TO CARDIAC TECHNOLOGY AND
BASIC ELECTROCARDIOGRAPHY**

Q. P. Code: 801510

Time: Three Hours

Answer All questions

Maximum: 100 Marks

I. Elaborate on:

(3 x 10 = 30)

1. Explain 12 lead ECG system in detail.
2. Discuss about the sources of Biomedical Signals.
3. Describe about the biological effects of Radiation.

II. Write notes on:

(8 x 5 = 40)

1. Blood Pressure Cuff.
2. Different modes of Ultrasound scan.
3. Stages of Hypertension.
4. Explain differential Auscultatory Technique.
5. Unipolar limb leads.
6. DC defibrillator.
7. Thermo-Luminescence Dosimeter.
8. Principle of Ultrasound imaging.

III. Short answers on:

(10 x 3 = 30)

1. Inverse square law.
2. Radioactivity.
3. Medical application of Ultrasound wave.
4. Action potential.
5. Write the color coding for ECG leads.
6. Coronary angiography.
7. Sources of Radiation.
8. Draw ECG graph sheet with dimension.
9. Hyperpolarization.
10. Lead apron.
