[KZ 0811] **AUGUST 2011** **Sub. Code: 1505**

B.Sc., CARDIAC TECHNOLOGY

FIRST YEAR

PAPER V - BASIC ELECTROCARDIOGRAPHY

Q.P. Code: 801505

Time : Three Hours **Maximum : 100 marks**

Answer ALL questions

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

1. Cardiac wave fronts.
2. Standard limb leads.
3. Normal P wave.

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

1. Augmented limb leads.
2. S I, S II, S III syndrome.
3. QT Interval.
4. Posterior wall myocardial infarction – ECG changes.
5. Rotation of heart.
6. ECG paper.
7. Left bundle branch block.
8. Atrial repolarisation.

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

1. Heart rate determination.
2. Transition zone.
3. Right axis deviation.
4. Left atrial enlargement.
5. Stokes adams attack.
6. U wave.
7. First degree heart block.
8. Factors determining the amplitude of QRS complex.
9. Ventricular tachycardia.
10. Criteria for left ventricular hypertrophy.

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[LB 0212] **AUGUST 2012** **Sub. Code: 1505**

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR

PAPER – V – BASIC ELECTROCARDIOGRAPHY

Q.P. Code : **801505**

Time : Three hours **Maximum : 100 marks**

(180 Mins) Answer ALL questions in the same order

I. Elaborate on:	**Pages (Max.)**	**Time (Max.)**	**Marks (Max.)**
1. Unipolar and bipolar leads in electrocardiography.	7	20	10
2. How do you measure QRS axis and what is its significance?	7	20	10
3. Describe myocardial cell membrane potential at rest, during activation and during recovery.	7	20	10
II. Write Notes on:			
1. Discuss possible errors in recording electrocardiogram.	4	10	5
2. Normal variations in heart rate in electrocardiography.	4	10	5
3. Describe QRS axis in a normal electrocardiogram.	4	10	5
4. Characteristics of normal P wave in electrocardiogram.	4	10	5
5. Discuss ST segment and its variation in a normal person's electrocardiogram.	4	10	5
6. How do you measure and report Q-T interval in electrocardiogram.	4	10	5
7. When and how do you record right chest leads?	4	10	5
8. What are U waves and what is their significance.	4	10	5
III. Short Answers on:			
1. Discuss precordial leads.	2	4	3
2. What is Einthoven's equation?	2	4	3
3. Write the normal durations of P wave, P-R interval, QRS complex.	2	4	3
4. Location of chest leads V7, V8 and V9.	2	4	3
5. During which part of the electrocardiogram does conduction occur in the A-V node?	2	4	3
6. Describe the normal T waves in leads V1 and V6.	2	4	3
7. Calibration check in electrocardiography.	2	4	3
8. Causes of artifacts while recording electrocardiogram.	2	4	3
9. How does a newborn baby's electrocardiogram differ from that of an adult?	2	4	3
10. What findings in the electrocardiogram will make you alert the doctor?	2	4	3

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[LC 0212] FEBRUARY 2013 Sub. Code: 1505

B.Sc. CARDIAC TECHNOLOGY

FIRST YEAR

PAPER – V – BASIC ELECTROCARDIOGRAPHY

***Q.P. Code:* 801505**

Time: Three hours Maximum: 100 marks

I. Elaborate on: (3X10=30)

1. Describe the concept of augmented limb leads
2. Describe the methods determining the electrical axis of the heart
3. What are the unipolar limb leads and how are they different from augmented limb leads?

II.Write Notes on: (8X5=40)

1. What is meant by horizontal heart?
2. Draw an ECG showing right bundle branch block in V1 and describe Right bundle anatomy
3. What are the non cardiac factors influencing the ECG recording
4. What is clockwise and counter clockwise rotation of the heart
5. Describe physiology behind PR interval in ECG
6. What is the normal QRS duration? When do you call it prolonged and reasons for QRS prolongation.
7. What is unipolar leads?
8. Draw a resting myocardial cell and its electrolyte mileu.

III. Write Answers on: (10X3=30)

1. Which are the leads showing 'P' waves well. What is the normal duration of 'P' wave?
2. What is meant by overdamping? What does it do to the ECG? Show the pattern of overdamping.
3. Which leads are useful to determine QRS voltage is normal or abnormal and when do you get low voltage complexes.
4. Describe the usual septal activation? What does it produce in V1 & V6.
5. When do you use half standardisation?
6. Draw a hexaxial reference system, label the leads and indicate the degree.
7. Draw the ECG pattern in aVR. Explain the reason behind that morphology?
8. When do you record V7 V8? Indicate their position diagramatically?
9. Draw the action potential and label each stage and explain the reason for spontaneous diastolic depolarisation.
10. Draw a normal ' P' wave, P pulmonale and P mitrale.

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LD 0212] **August 2013** **Sub.code: 1505**

B.Sc. CARDIAC TECHNOLOGY
FIRST YEAR
PAPER V – BASIC ELECTROCARDIAGRAPHY (ECG)
Q.P. Code : 801505

Time: Three hours **Maximum: 100 Marks**

Answer all questions

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

1. Repolarization is represented by what wave in the ECG
2. Describe the ventricular recovery process
3. Augmented limb leads.

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

1. Unipolar leads
2. Describe the left bundle and draw an ECG with left anterior hemi block
3. Describe Einthoven's triangle
4. Draw a diagram depicting the conduction between sinus node and AV node and label the bundle
5. Describe the concept of horizontal heart
6. What portion of ECG represent the repolarisation and how is it upright.
7. The electrolyte mileu of a resting cell and what change is produced once it is activated.
8. What is the normal pattern of activation of ventricular myocardium in the right bundle branch block, left bundle branch block and what ECG changes does it produce.

III. Write Notes on: **(10 x 3 = 30)**

1. Draw a QRS and T in V1 and V5V6 in Left bundle branch block
2. Draw the normal progression of R from V1-V6
3. How do you calculate PR interval
4. How to determine whether QRS voltage is normal or low
5. What is the normal QRS pattern in AVR
6. Draw a normal action potential and label the phases
7. What is meant by spontaneous diastolic depolarisation. Where is it seen.
8. Draw an ECG in sinus rhythm showing P, QRS and T relation
9. Draw a QRS complex and label intrinsicoid deflection
10. Right axis deviation- the ECG pattern in L II, L III and aVF.

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[LE 0212] **FEBRUARY 2014** **Sub.code: 1505**

B.Sc. CARDIAC TECHNOLOGY
FIRST YEAR
PAPER V – BASIC ELECTROCARDIAGRAPHY (ECG)
Q.P. Code : 801505

Time: Three hours **Maximum: 100 Marks**

Answer all questions

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

1. Conduction system of the heart
2. Which are the unipolar limb leads and how are they different from augmented limb leads
3. Determination of electrical axis

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

1. PR interval what does it indicate and its relation to heart rate
2. What is intrinsicoid deflection. What does it indicate?
3. Calculation of QT and Qtc. Drugs which prolong QT.
4. What is meant by clockwise and counter clockwise rotation of heart
5. Describe an action potential of myocardial cell
6. Non-cardiac factors that alter the appearance of ECG
7. Draw a hexaxial reference system and label the leads and degree they indicate
8. How to calculate heart rate in sinus rhythm and atrial fibrillation.?

III. Write Notes on: **(10 x 3 = 30)**

1. Normal paper speed
2. Normal P wave
3. Differentiation from normal and pathological Q wave
4. Normal duration of QRS – when do you say it is prolonged, conditions in which it is prolonged.
5. When do you say ECG shows left axis deviation. Draw a QRS complex in LI, aVL, LIII and AVF in left axis
6. Draw a diagram depicting QRS in V5, V6.
7. What is an U wave and conditions where U is prominent
8. What is meant by over damping and how does it alter the ECG
9. Normal P wave axis
10. Normal P wave pattern in LII, LIII,V1 and explain the mechanism of production.

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[LF 0212] **AUGUST 2014** **Sub.Code: 1505**

B.Sc. CARDIAC TECHNOLOGY
FIRST YEAR
PAPER V – BASIC ELECTROCARDIOGRAPHY (ECG)
Q.P. Code : 801505

Time: Three hours **Maximum: 100 Marks**

Answer all questions

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

1. Describe normal conduction system of heart.
2. Describe the concept of Einthovens triangle.
3. Draw a normal ECG pattern in LI, aVL, V1, V5, C6 and Explain why the pattern is like this base on electrical activation.

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

1. Triaxial and Hexaxial reference system.
2. Left axis deviation – Draw the complex in I,aVL, liii, AVF.
3. Non cardiac factors that can alter the appearance of ECG.
4. What is an U wave? Which leads have prominent U wave?
5. What does the PR interval indicate and what is it's relation with heart rate?
6. Rate calculation in atrial fibrillation.
7. What is meant by clockwise and counterclockwise rotation of heart?
8. What is the normal R wave progression in chest leads and why?

III. Write Notes on: **(10 x 3 = 30)**

1. Draw a QRS and T in V1 and V5, V6 in left bundle branch block.
2. Right axis deviation – the ECG pattern in L II, LIII and Avf.
3. How to determine whether QRS voltage is normal or low?
4. Normal P wave axis.
5. When do you say ECG shows left axis deviation? Draw a QRS complex in LI, aVL, LIII and aVF in left axis.
6. Differentiation from normal and pathological Q wave.
7. What do you mean by vertical heart?
8. Mark the position of V7, V8 and V4R. Which are the situations where these leads are taken.
9. When do you say PR interval is prolonged and conditions where PR is Prolonged?
10. What is normal QRS pattern in AVR?

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