

# **REPORT ON INTERNSHIP PROGRAM**

**SUBMITTED BY :- RAHUL KUMAR THAKUR**

**COLLEGE :- DUMKA ENGINEERING COLLEGE**

**BRANCH :- ECE**

**PLACE OF INTERNSHIP :- IIT HYDERABAD**

**EMAIL ID: - rahulkumardmk2497@gmail.com**

**A STUDY ON THE TRANSFORMATION ON 3-  
LEAD SYSTEM TO STANDARD 12-LEAD  
SYSTEMS AND VICE VERSA FOR REMOTE  
CARDIAC HEALTH CARE MONITORING**

## • **Introduction:-**

- Electrocardiography is the process of producing an electrocardiogram , a recording -a graph of voltage versus time- of the

electrical activity of the heart using electrode placed on the skin .This electrode placed on the skin.

- In conventional 12-lead ecg ten electrodes are placed on the patient's limbs and on the surface of the chest .

## • **Electrodes And Leads :-**

- **Electrodes are the actual conductive pads attached to the body surface . Any pair of electrodes can measure the electric potential difference between two corresponding location of attachment . Such a pair forms lead.**

- **Commonly 10 electrodes attached to the body are used to form 12 ECG leads with**

**each lead measuring a specific electric potential difference .**

- **Leads are broken down into three types -**

**Limb , Augmented limb , and Precordial or chest.**

- **The 12 lead ECG has a total of three limb leads and three augmented limb leads and six precordial leads . The electrodes names are RA , LA , RL , LL , V1 , V2 , V3 , V4 , V5 , V6 .**

- **Main Components:-**

- There are three main component of an ECG:P- Wave , which represent the depolarization of the atria , the QRS complex ,which represent the depolarization of the ventricles and the T waves , which represent the repolarization of the ventricles.

- **Medical uses:-**

- Symptoms such as shortness of breath , murmurs , fainting , seizures, arrhythmias including new onset palpitation or monitoring of known cardiac arrhythmias.

- **Working:-**

- The electrode placed in skin detect the small electrical changes that are a consequences or cardiac abnormalities , including cardiac rhythm disturbances(such as atrial fibrillation and ventricular tachycardia) ,inadequate coronary artery blood flow (such as myocardial ischemia and myocardial infraction ) , and electrolyte disturbances(such as hypokalemia and hyperkalemia) . cycle(heartbeat).Changes in the normal ECG pattern occur in numerous cardiac abnormalities , including cardiac rhythm disturbances(such as atrial fibrillation and ventricular tachycardia) ,inadequate coronary artery blood flow (such as myocardial ischemia and myocardial infraction ) , and electrolyte disturbances(such as hypokalemia and hyperkalemia) .

- **Conclusion :-**

- **I spent around one month at the IIT Hyderabad for my internship and this program gave to me such opportunity to enhance my knowledge . I learnt here about the ECG – ecg waveform , diffrenet component of ecg , electrodes and leads of an ecg . And also study the 3 to 12 lead optimization of ecg.**