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ECG

⇒ Lecture video #01.

* ECG - QRS Complex variants
in Limb leads part #01.

⇒ Today we are going to
talk about what are
the normal pattern of
QRS complex in limb
leads.

There are 6 limb leads.

(i) AVR

(ii) AVL

(iii) AVF

We are going to talk
about normal (~~to~~ ~~lead~~) QRS
patterns and their normal
variants not abnor-
malities.

we try to understand those patterns logically.

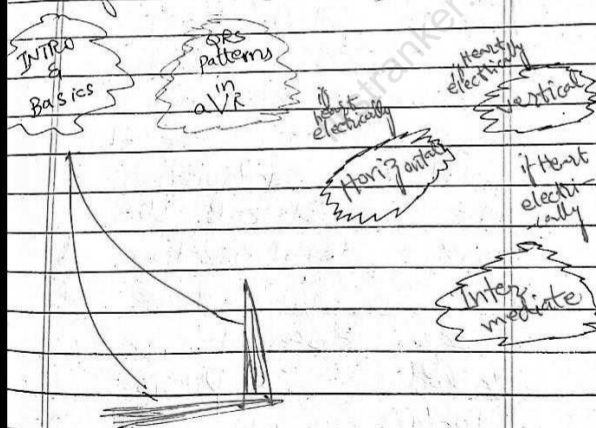
X $\Rightarrow$ There are 6-limb leads, 3 are bi-polar and 3 are uni-polar limb leads.) X

✓ $\Rightarrow$ Even though there are 6-limb leads but at least a good doctor and good medical student should be familiar with 18 different patterns which are normal patterns.

18 different variants of QRS patterns.

So today we going to master 18 patterns because if

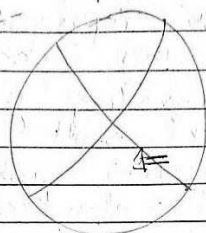
⇒ Now TO under-stand those patterns logically we made a format (Chart)



First of all we start with the basics. ~~write~~ first

of All we should know
that QRS complex graphically represent the
ventricular stimulation.
graphically represent
the electrical activity in
the ventricle during
depolarization process.
When ventricles under-
go depolarization
the ECG pointer is
drawing QRS complex.
So what are the
electrical activity in
the ventricle during
the depolarization.
We have al-
ready discussed in de-
tailed in previous
lecture. we will do
a little review here.
As we discussed

(+): Previously, that when electrical impulse or wave of de-



-polarization. From the AV node and bundle of His system enter into ventricular first of all (they or it depolarizes septum: (inter-ventricular septum) and inter-ventricular septum is depolarized from left to the right. so the vector of septal depolarization of ventricle is directed rightward and upward. and its a

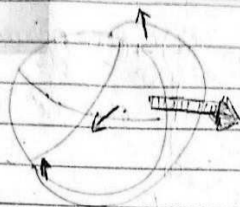
it a small vector
so what is this
structure representing.
← this vector is
representing the ventri-
-cular septal depol-
-arization which is
first electrical event
during the ventri-
-cular depolarization. and
this vector is in the
frontal plane. this
vector is directed right
ward and slightly
upwards. Once septum
is completing its de-
-polarization. the wave
of depolarization enters
into major ventricular
tissue (right left ven-
-tricular tissue
through the

prolonged system and you know that the left ventricle is much more thicker than the right ventricle. So when

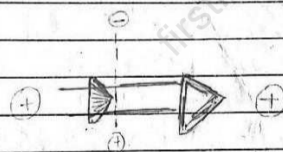


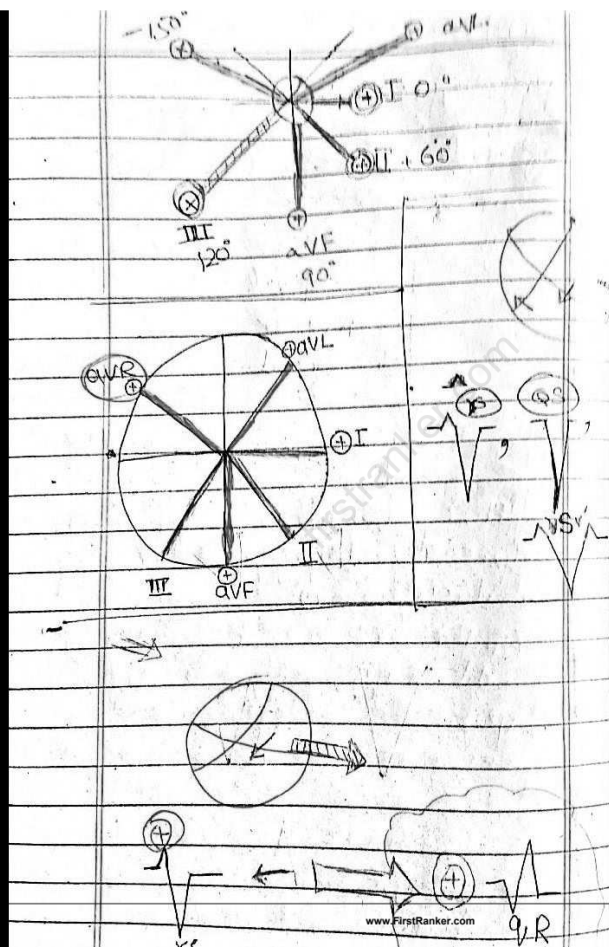
waves of depolarization spread through the ventricles. there is left ventricular depolarization and right ventricular depolarization.

(3)

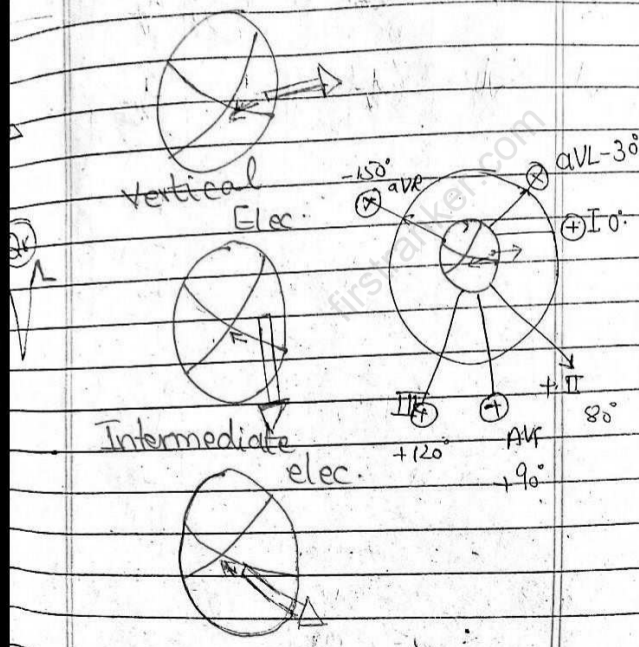


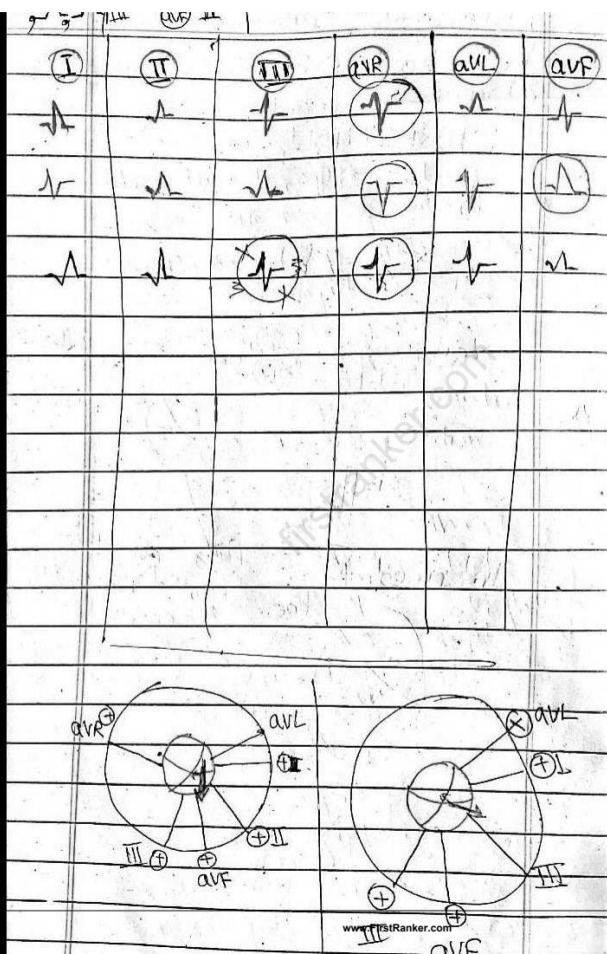
→ septal
→ major
→ Based.





⇒ Electrical Position of
the heart & QRS complex
in limb leads.
HORIZONTAL.





⇒ Electro - Cardio - graphy means that electrical activity of the heart is graphically ~~is~~ presented.

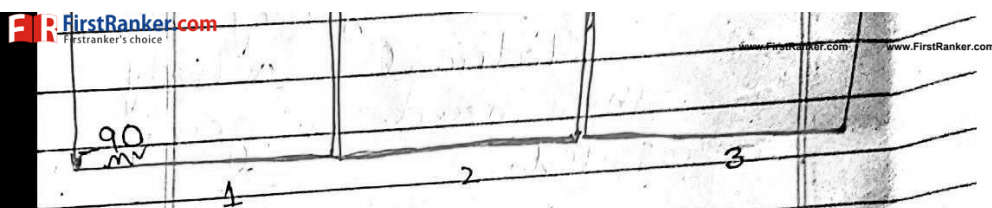
OR

graphic presentation of electrical activity of the heart.

To really understand the fundamentals of

E.C.G. you must must understand the electrical activity of the heart.

Let talk few words of the electrical activity in the myocardial cell.



Let's suppose first the myocardial cell is rest. if the cell is electrically resting it must have resting membrane potential.

Resting membrane potential is a voltage difference b/w the inside of the membrane and outside.

- rance potential is (≈ 90)

mv. in a resting cell.

when i say this myo-
-cardial cell has -90-

mv resting membrane
potential i mean that

resting condition of
this myocardial cell.

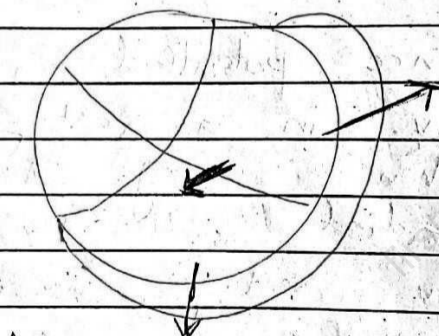
has it membrane inter-
-nally polarized negative.

Now what really happens

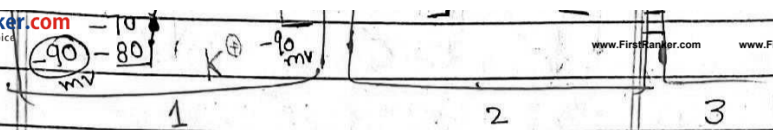
myocardial cell.

Screen shots pics.

⇒



→ septal
→ Major
→ Based



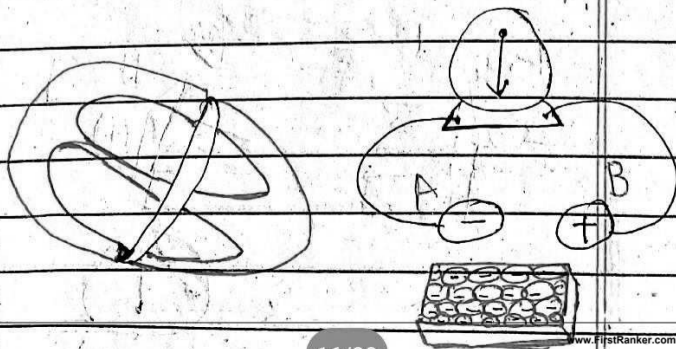
Stimulation

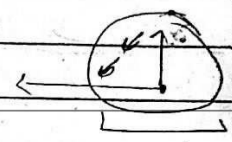
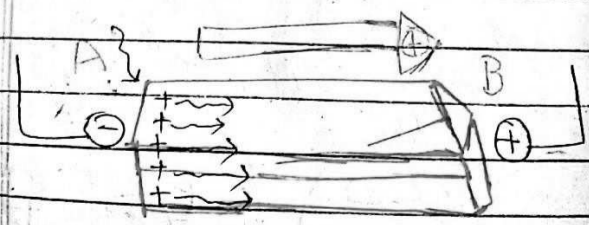
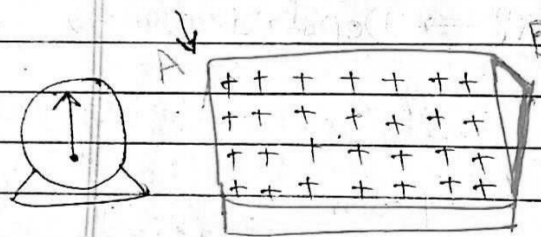
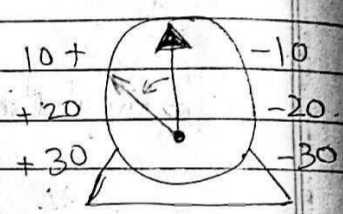
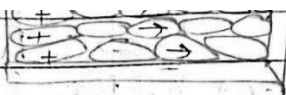


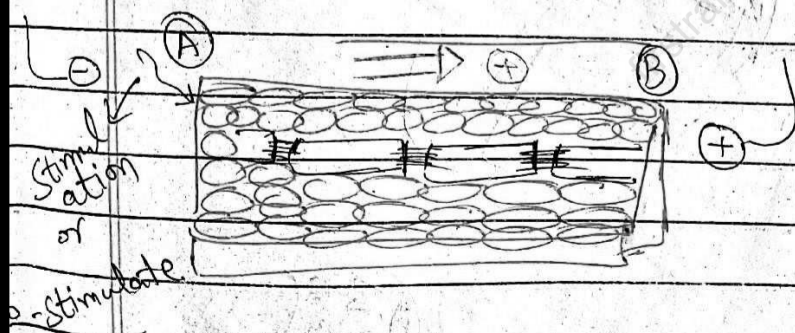
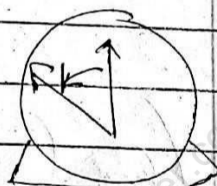
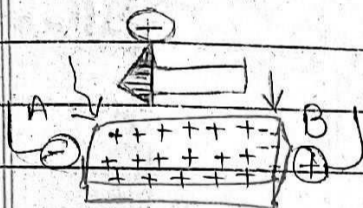
RMP $\rightarrow$ Depolarization $\rightarrow$

Repolarization

Action potential

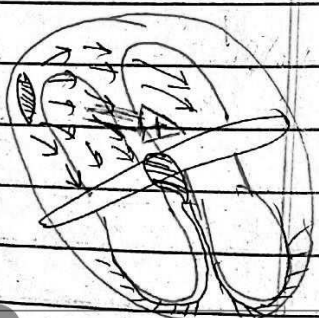
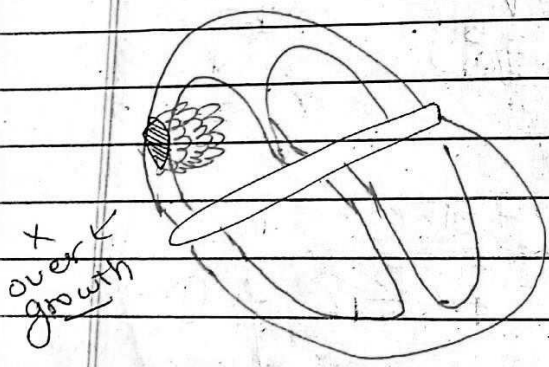






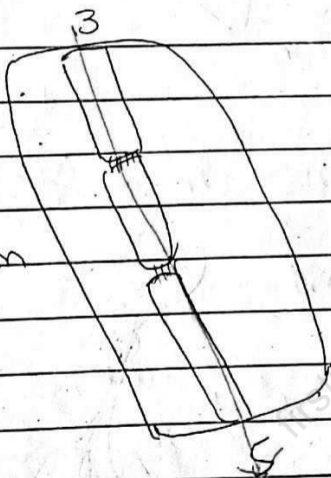
vectors

⇒ E.C.G
pattern.



-60mV

Fast
conduction



90

FirstRanker.com

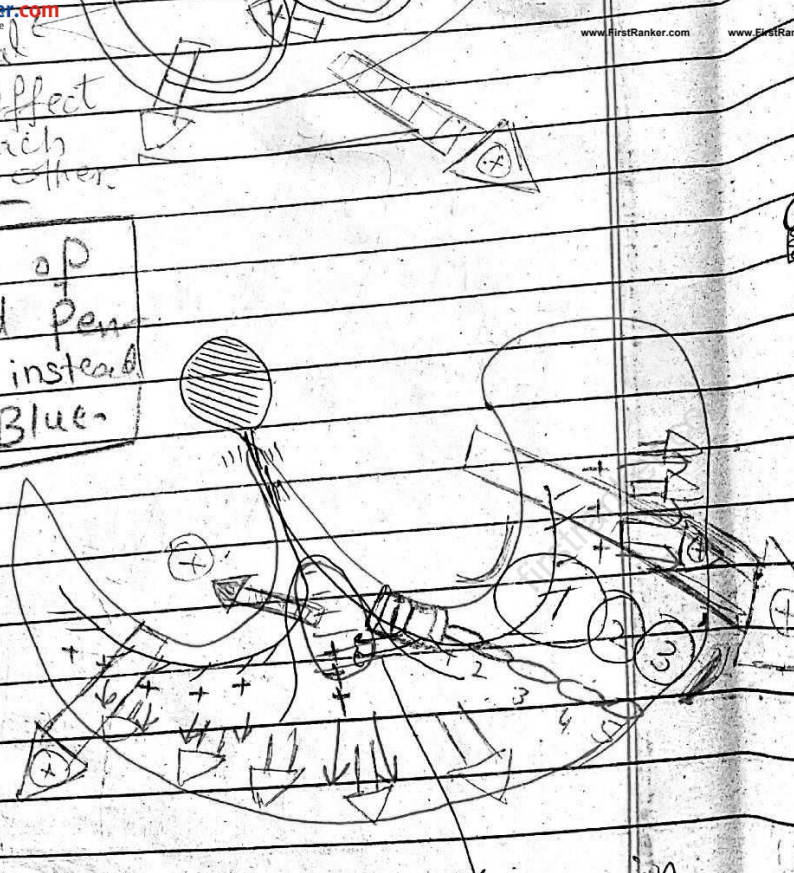
FirstRanker's choice

little

rep. the effect of each other.

Note: -

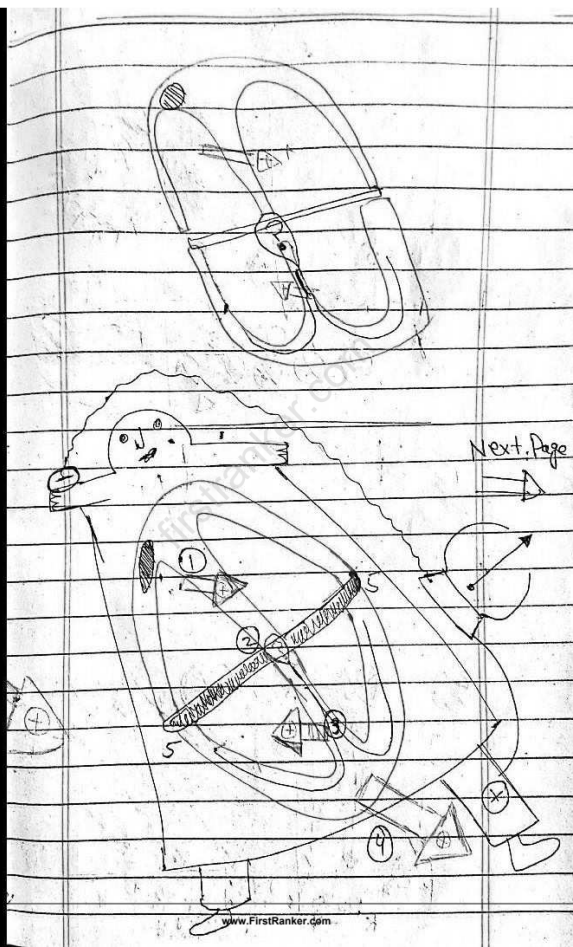
Use of lead pen - will instead of Blue.

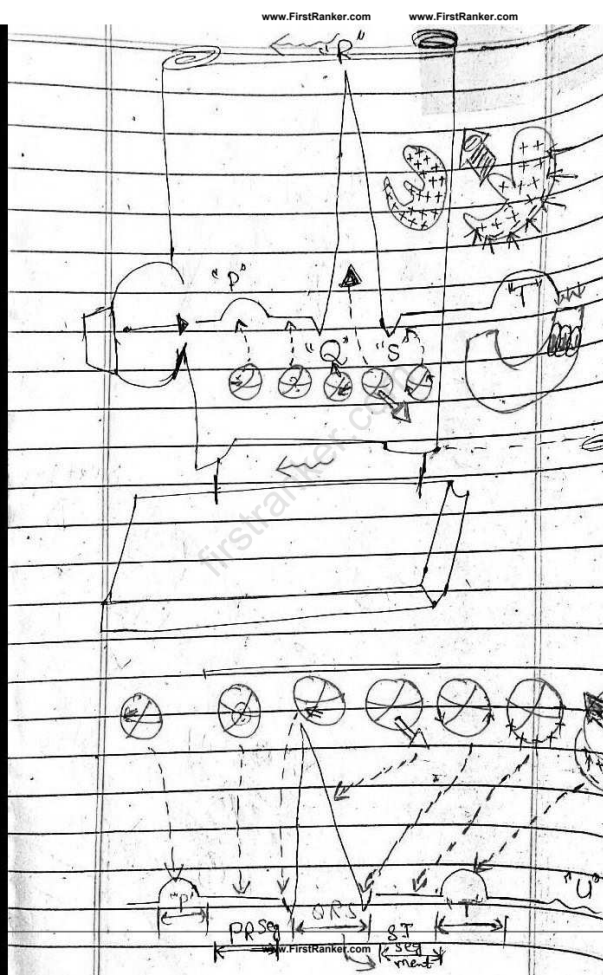


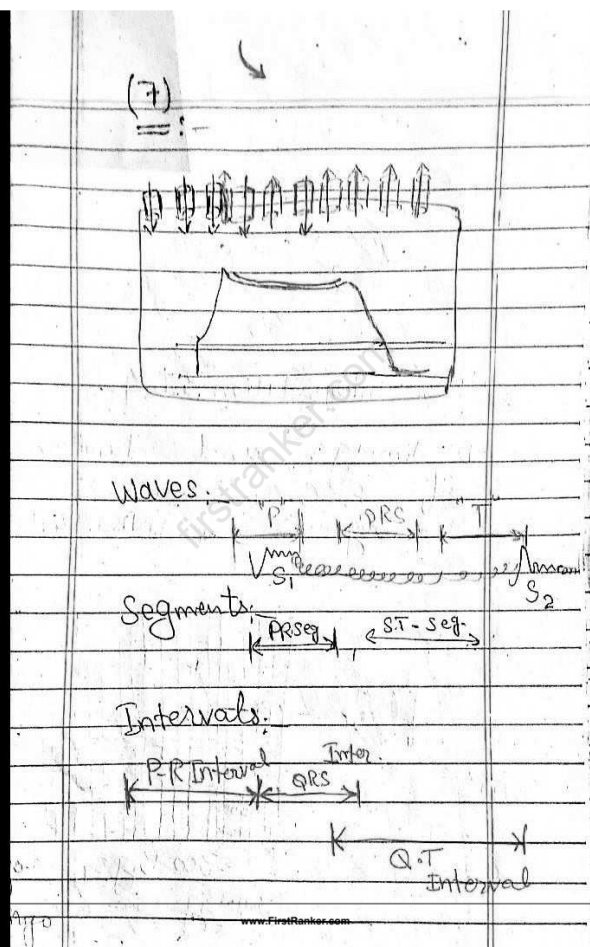
Blue color in Pic.

21/30

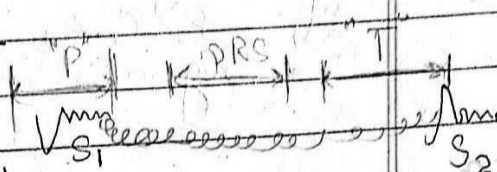
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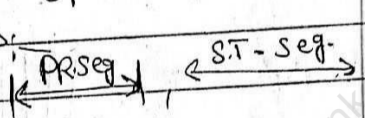




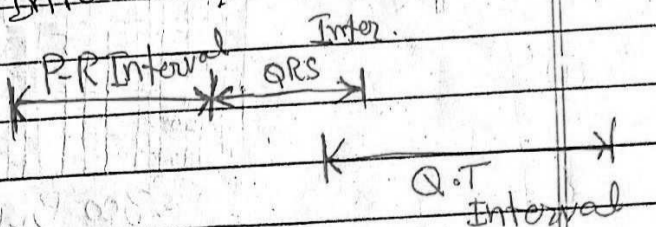
Waves:

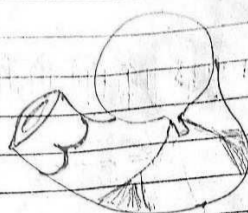


Segments:



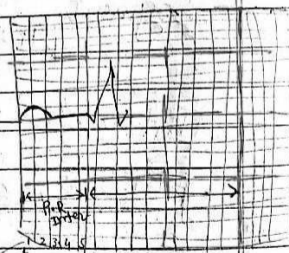
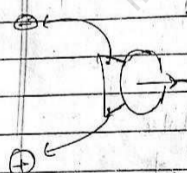
Intervals:





EKG Interpretation Part 4 :-

⇒ Timings and duration of E.C.G. WAVES, Segments & INTERVALS



$$\begin{aligned}
 300 \text{ Big Sq} &= 1 \text{ sec} \\
 300 \text{ Big Sq} &= 60 \text{ sec} \\
 1 \text{ Big Sq} &= 0.20 \text{ sec} \\
 (1 \text{ Big Sq} &= \text{Small Sq})
 \end{aligned}$$

$$5 \text{ small } s_q = 1 \text{ Big } s_q = 0.20$$

$$1 \text{ small } s_q = \frac{0.2}{5}$$

$$0.04$$

$$1 \text{ s.s} = 0.04 \text{ sec.}$$

$$2 \frac{1}{2} \text{ s.s} = 0.04$$

$$0.04$$

$$0.02$$

$$0.10 \text{ sec.}$$

$$10 \text{ s.s} \times 0.04 = 0.4 \text{ sec.}$$

$$0.08 - 0.12$$