Name_____ Date_____

SECOND TERM E-LEARNING NOTE

SUBJECT: PHYSICS **CLASS: SS 3**

SCHEME OF WORK

WEEK	**TOPIC**
1	Alternating Current (I)
2	Alternating Current (II)
3	Models of the Atom
4	Radioactivity (I)
5	Radioactivity (2)
6	Energy Quantization
7	Photo-Electricity (x-ray)
8	Conduction of Electricity in gases.
9	Wave- Particle Paradox
10	Rockets and Satellites; Component parts and functions Basic Electronics; Semiconductors.

REFERENCE TEXTBOOKS AND PAST QUESTIONS

- New School Physics by Prof. M.W Anyakoha.
- New System Physics by Dr. Chow.et.al
- WAEC past Questions pack
- UTME past Question pack
- MASTERS Physics Practical Manual.

WEEK ONE
TOPIC: ALTERNATING CURRENT(I)
CONTENT

- ❖ Alternating Current Circuit
- ❖ Graphical Representation
- ❖ Peak and R.M.S. Values

A.C circuits are circuits through which an alternating current flows. Such circuits are used extensively in power transmission, radio and television, computer technology, telecommunication and in medicine. It varies sinusoid ally or periodically, in such a way as to reverse its direction periodically. The commonest form of such a.c can be represented by;

$I = Io \sin 2\pi ft$…… 1

$= Io \sin wt$

I is the instantaneous current at a time t, Io is the maximum (or peak) value of current or its amplitude; f is the frequency and $w = (2\pi ft)$ us the angular velocity, (wt) is the phase angle of the current

Also,

$V = V_o \sin 2 \pi ft$……..2

Name_____ Date_____

$= V_o \sin wt$

Examples

If an a.c voltage is represented by 1f

V = 4 sin 900 πt, calculate the peak and instantaneous voltage

The peak voltage, Vo = 4v

$2\pi ft = 900\pi t$

$f = \frac{900}{2}$

$f = 450Hz$

$w = 2\pi f = 900\pi$

Peak, and r.m.s. values of a.c

EVALUATION

1. Differentiate between peak and r.m.s voltage.
2. Calculate the peak and instantaneous voltage of an a.c source represented by; V = 5 sin 500∏t.

Variation of alternating current (or voltage) with time

An alternating current (or voltage) varies sinusoidally as shown in the diagram above. It is a sine waveform. The amplitude or peak value of the current Io is the maximum numerical value fo the current.

The root mean square (r.m.s) value of the current is the effective value of the the current . it is that steady current which will develop the same quantity of heat in the same time in the same resistance. The r.m.s. value for the current is given by: