



Name		* • • • • • • • • • • • • • • • • • • •	Adm No		
Index No	Class	Signature	t	Date	
232/2			15	1	
PHYSICS					
Paper 2		e			
MAY, 2016					
2 hours					

## ALLIANCE HIGH SCHOOL PHYSICS PAPER 1 PRE-TRIAL EXAMINATION

#### INSTRUCTION TO CANDIDATES

- 1. Write your name and index number in the space provided.
- 2. This paper consists of two sections A and B.
- 3. Answer ALL questions in section A and B in the space provided below each question.
- 4. Non programmable silent electronic calculators and KNEC mathematical tables may be used.
- Where necessary take;
   Electronic charge, e = 1.6x10<sup>-19</sup>C
   Velocity of light, c = 3.0x10<sup>8</sup>m/s

#### FOR EXAMINER'S USE ONLY

SECTION	QUESTION	MAXIMUM SCORE	CANDIDATES SCORE
Α	1-13	25	
, a	1-2	12	
	15	12	
В	16	11	
5	17	10	
12	18	10	
<u>e.</u>	Total score	80	

### SECTION A (25 MARKS)

### Answer All questions in this section

1. Figure 1 shows an object placed infront of a plane mirror drawn to scale.

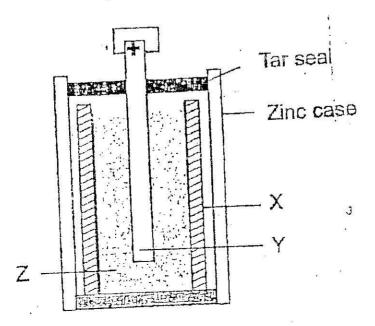


By use of appropriate rays, draw rays to show the exact location of the image as seen by the eye (2marks

2.	In an experiment on static electricity, the gold leaf of a negatively charged electroscope was	
	observed to fall then rise when a strongly positively charged polythene rod was gently lowered	
	towards it. Explain this observation (2marks	s)

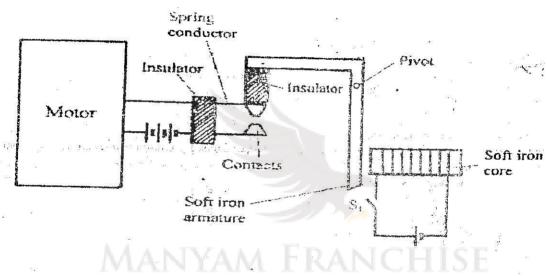
MANYAM FRANCHISE

Figure 2 below shows a Leclanche cell



X		(Imark)
Y		(Imark)
7:	E E	(lanak)

3. Figure 3 shows a schematic representation of one of the applications of an electromagnet

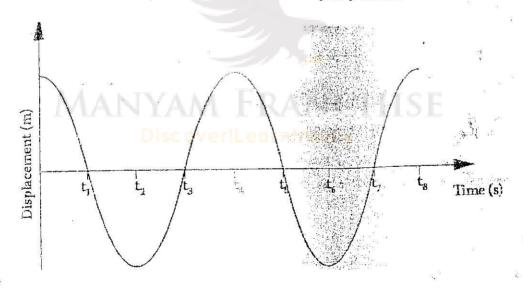


Disc øver!Learn!Applu

Briefly describe how the	circuit works	***	(Zmarks)
	<u>.</u>	20	26
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,			
*		#: 	
	The state of the s		1.00
₩	.e %		
	********************		
200	i)		된

4.	Distinguish between X-rays and Gamma rays	(lmark)
	,	K E
	9	
** *** **		***************************************
		*******************
5.	One of the primary ways in which power is lost in transformers is through hy Describe how the power is lost in this way and how it can be minimized	(2marks)
		***************************************
	·	
		***************************************
	······································	**************************************

5. Figure 4 shows a wave profile for a wave whose frequency is 2Hz.



Determine the numerical value of t, (Emarks)

7. The half-li	fe of a radioisotope is 5.27 years. Calculate the m	
a given ma	ss of the isotope to decay	(2marks)
	23.50. (27. (2. (2	***********************************
	3 Architecture (Marie III)	
o		
***************************************		***************************************
		e e
,		
8. Figure 5 be The time be	How shows an a.c signal fed across the Y-plates dase is set at 100ms/cm and the Y-gain at 120V/cr	of a cathode ray oscilloscope (CRO). m.
· 		9
, t		
 1 1		958°
ļ		
		rn
1	MANYAM FRAN	
	Figure 5 DiscoveriLearnIApp	ly
Determine the:	e e	
	at the state of th	
i. The free	mency of the a.c signal	(2marks)
		· · · · · · · · · · · · · · · · · · ·
5	5	
******************		
	· · · · · · · · · · · · · · · · · · ·	
	4 A	
ii. Peak vo	Itage	(1mark)
		g
	*******************************	



	velocity of the ejected electron	18	ess the terminal	o or an zeruj	(2marks)
					(zmarks)
				\$1	28
					929
	1.14.50	TAME INTERNATIONAL CONTRACTOR		** *** * * * * * * * * * * * * * * * * *	
	( <del>)</del>				A
,					
	*		4		
******	****************************				
	ter out		# p		8
1.	The circuit in figure 5 help	ou consists of a	esser <b>n</b> eme o	1741 194	5) 1965 9 5 (21 79 5
1944	The circuit in figure 6 belo	W COUPTER OF SEC	ince of electron	iofive force,	a switch, two bulbs and
	two devices $D_1$ and $D_2$ .				
	***				
	9	į),	D <sub>2</sub>		
	3		1/1		
				;; ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	8
		1		ë	ži įs
	,	K	/		
	1, (×)			$\sim$ L <sub>2</sub>	
		·	<u></u>	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	
	8		90		
			~	• ]	
				indiana.	
					3
				. 6	
	di di				40
	\$20				

Figure 5 ANYAM FRANCHISE

i.	Identify the devices D <sub>1</sub> and D <sub>2</sub> or Learn Apply		(1mark)
oesees ži		85 (0) (0) (0) (0) (0) (0) (0) (0) (0) (0)	
		MARINESA 1	eni uzanaki mar
ii.	State and explain the observation made when the switch K is closed	(6	(2marks)
	g 5	AAN VACCALORED CROSS CAS	singless of contractions of the contraction of the contraction of the contraction of the contraction of th
* * * * * * * * * * * * * * * * * * * *			

11. Figure 7 shows an image of an object placed infront of a convex lens drawn to scale.

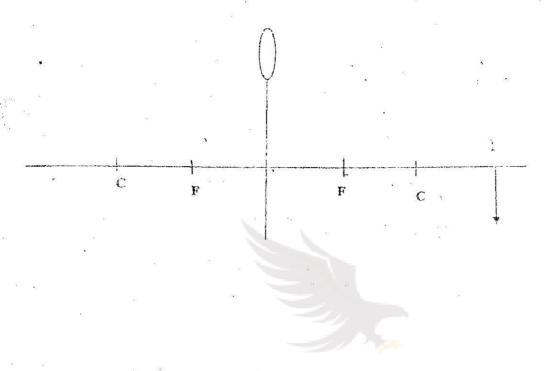


Figure 7

By using appropriate rays, locate the position of the object

(2mark)

12. In figure 8 below, the total charge in the circuit is  $2.0 \times 10^{-4}$  C.

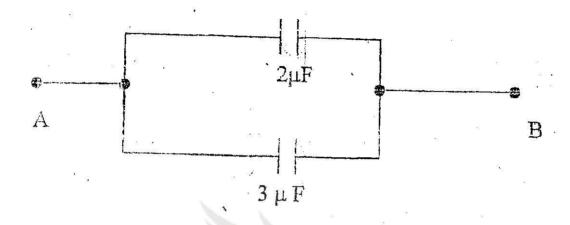


Figure 3

Determine the potential difference across AB	(2marks)
Disc over!Learn!Apply	5
· · · · · · · · · · · · · · · · · · ·	T STATE OF THE STA
×	(31) ********

# SECTION B (55 MARKS)

# Answer ALL questions in this section

13. a) Define the term electromotive force as used in current electricity	(1mark)
b) In the circuit diagram of figure 9 below, the total internal resistance of the bat	tery is $0.5\Omega$ and
the ammeter has a resistance of $1\Omega$ .	g v
$\frac{12V}{2.6\Omega}$	
MANYAM FRANCHISE Discover!Learn!Apply	8
Determine	
i. the total resistance in the circuit	(2marks)
ii. the current flowing in the circuit through A	(2marks)



	**************************************
· · · · · · · · · · · · · · · · · · ·	,,,
iii. the current through the $2.4\Omega$ resistor	(3marks)
n g	0001 000000 00000 00000 00000 00000 00000 0000
*	***********
$z^{-\frac{1}{2}}$	
iv. the reading on a voltmeter of infinite resistance placed across the battery	(Imark)
4. a) Define the term activity of a sample as used in radioactive decay study	(1mark)
	Belondarie d'Armandi, es es
	**************
b) Figure 10 below is a schematic diagram of Geiger-Muller tube used in radioactivity	ty
experiments. Discoveril enrolandu	7/

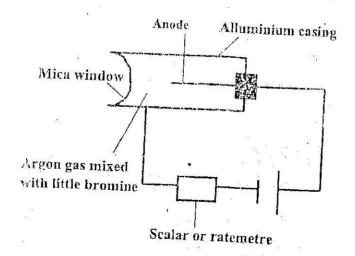


Figure 10

ii. Describe how the radiations entering through the mica window in the tube is detected
(3marks)

iii. State the function of the resistor R (1mark)

c) The tracks in figure 11 were observed in a Diffusion cloud chamber.

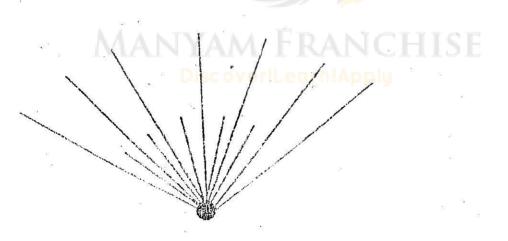


Figure 11

Identify the radiation givin	g a reason for your answer		(2marks)
2		ÿ.	
Radiation			
			25
Reason	g T	ij	W 14
. P. J. P. J. P. J.	4.4.1.4.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
9		*	#
s s		ž	

d) Figure 12 shows a graph of the rate of decay of a radioactive isotope

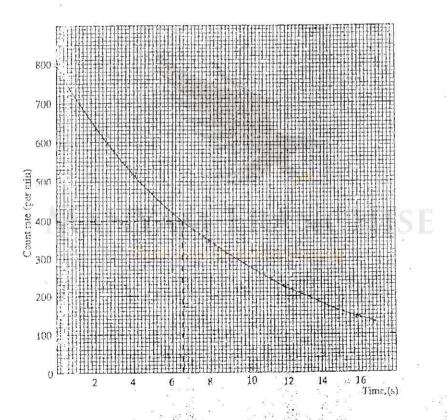


Figure 12

i.	determine the half-li	ife of the sample	The property of the second	R M SM	(linarks)
			iĝ.		,
			75		8
	errene errene en de den en		*****************		
				entace est a contract several representation and a several representation of the several represe	2 2
	1/2	*6	₩ .		
		*********************	***************		
59					Tr.

ii.	Given that the background radiation is 15 counts per min	
	sample at the 8 <sup>th</sup> second	(2marks)
	e v	
XI 100.55 1005 1007		manana apananapana
	·	
145		***************************************
15. a)	)Define capacitance	(Imark)
	· · · · · · · · · · · · · · · · · · ·	
20 20	x as	
	xperiment to determine the relationship between the voltage ce C=2200µF to discharge, the results in table 1 were obtain	
Table 1		=

2.0

5.12

Voltage, V (v)

Time, t(s)

2.5

2.49

2.25

3.51

i. Draw a possible circuit that could have been used to obtain the results in table 1 (2marks)

1.75

5.90

1.50

7.48

MANYAM FRANCHISE
Discover!Learn!Apply

1.25

9.12

					<del>-</del> ᠯ-┞╌╂┪┵╢┿┹┵╍
					<u> </u>
		74111111		<del></del>	<del>┤</del> <del>┤</del> ┤ <del>╎</del> ┼┼╌┼┼┼
		4 1 2 3 4 1 1 5 1 6			
		7/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/1	·├ <del>┤</del> ┼┼┼┼┼┼	<del>·┊╵┊╎┼┼</del>	
	╇╾┝╼┋╌╶╌┧ <del>┈</del> ┝╾┟╌┪╌ <i>╅╸</i> ┇╶╬╴╏				
	أحف وأم المراجع والمحروب والمراجع	<u> </u>	<u> </u>		
			-1	4	delderiedisk
		4-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	3-1-1-1-1-1		4-1-1-1-1-1-1
		41414141			444444
	<del>╎┋┋</del> ┼╌╏╌╏╌┋ <del>┋</del>	<u>-1- - - - - - - - - - - - - - - - - - -</u>	<u>-:</u>	<del>;                                      </del>	
+++++++++++++++++++++++++++++++++++++++	-  <del>- - - - - - - - - - - - - - - - - -</del>	+		+ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$ $+$	++++++
		747444			
<u>- - - - - - - - - - - - - - - - - - - </u>				<u> </u>	
	<del>                                     </del>	++++++		<del></del>	
		77774111			
		<u> </u>		<del></del>	- <del></del>
	<del>j                                     </del>		+1+1+1+1	<u>i                                    </u>	<u></u>
			<del></del>		+++++++++
<u> </u>		<del>i- - - - - - - - - - - - - - - - - - - </del>	<u>:                                    </u>	<u> </u>	
(- - <del> - - - - - - - - - - - - - - - - - </del>		++		+	<del>╺╏╏╏╏╏</del>
<del>!                                      </del>	<del>╎╸</del> ╏╸╏╸┨╼╏╼╏╼╏╸┇	<del>-}</del>	<del></del>	<del></del>	<del></del>
	+++++	-1		<del>·</del> ∔+++ <del>-</del>	-{-{
<del>                                      </del>	<del>╎╸</del> ╏╍╅╌╏╸┨╶┼╸╂╌┋╒╏	11111111		<del>·</del> ┆ <del>┤┦</del> ┤ <del>╎╏</del> ┼┼┼	
		+		-+	
					3
┄╬╾┩╾╬╼╂╼ <del>┋</del> ╼╊╼ <del>┋</del> ╼╊ <del>╼╬</del> ╌┣╼╠╼ <del>╠╺</del> ╈╼╟╼	<del>╎┋┋</del> ╇╅╃╃	<del>╸</del> ┋╸┨╸┦╸╂╼┨┈╂╶┨╶╂	╼╁╼╂╼┠╼┼╼┼╼┾╼┝╼┡╺╬╍┼	<del>╺╡╘┋</del> ╂┿┿╅╂╃┦	╶ <del>┦</del> ╌┤╌┤╌┤╌┆╌┼╌┼╌┼╌┟╌
ne			A CONTRACTOR OF CONTRACTOR		
um voltage V. acı	ross the canac	itor			(1marks)
ronago , y uez	obb the capito.	. 6671			(22:22:10)
					*******
			165		
*****************					AND SECURITY OF SECURITY
	28				·
C- 1 - C1   1	e decay		- 3 <b>4</b>		(1marks)
		um voltage $\operatorname{V}_0$ across the capaci	um voltage V <sub>0</sub> across the capacitor	nun voltage $V_{f 0}$ across the capacitor	nun voltage $V_{0}$ across the capacitor

III	The resistance R of the voltmeter given that t=0.693CR	(2marks)
TRANSPORT RATE	o ao taonana anno an an an ann an ann an ann an	
*******		***********
16.	a) State Faraday's law of electromagnetic induction	(Imark)
		1
**************************************		
	b) Figure 13 shows a coil in a magnetic field. The coil rotates in the direction shown to	produce a
	current.	
*	Rotation CHISE Apply	
	Y S	107
	Figure 13	
i.	name the parts labelled $X$ and $Y$	(2marks)
	X	

ii. On the axes of figure 14 below, sketch a graph of electromotive force (e.m.f) produced with time assuming the coil was initially in a vertical position and rotates in the direction shown.

(2marks)

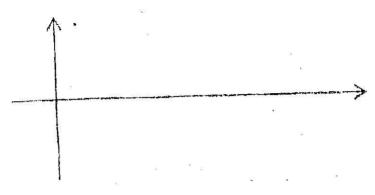
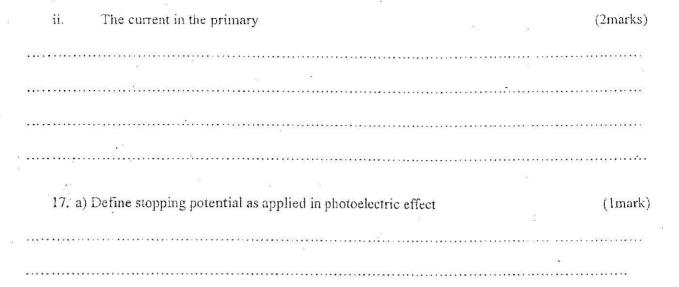
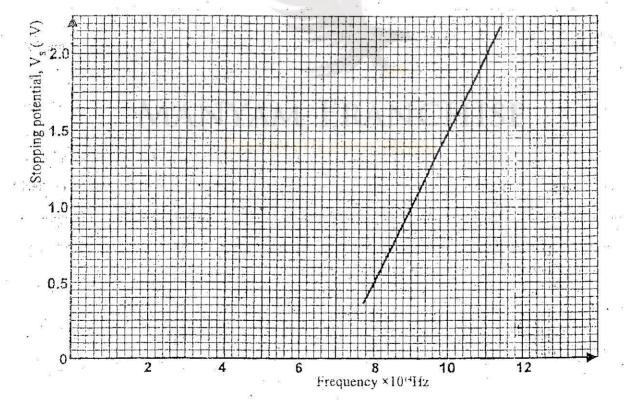


Figure 14

iii.	Suggest the modificat	ions recommende	ed if the set up w	vas to be used to	produce direc	t current
	Set on					2marks)
ext exe	MAN	yam F	RANC	CHISE	**************************************	
	D	iscoverlLe	earn!Appl		***********	
.,	inidikinda intelesi alamak kasakana *	******************	******************************		alementen eta elektroako elektroako	
	**************************************	to constitue de la composition della composition	• • • • • • • • • • • • • • • • • • • •	8 8 6.64474	;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	*****
	er ieles arrecerri arrecer.	*****************	*******************			
c) A 1 230V	transformer supplies a cu 7. Given that the transform	rrent of 13.5 A at ner is 80% efficie	t a voltage of 48 ent, calculate	V to a motor fro	m a.c mains s	upply of
i.	The power loss	ar er		26	(2	2marks)
10 FB & C & D		**************************************	ee√eeeeen waar ee waara S			
		***************		*** ******************	***********	
					6 - 1	
	unce Commence and a septi		*	PTV 1 PV TV		æ



b) The graph in figure 15 shows the relation between the stopping potential  $V_s$  and the frequency, f, when a certain metal surface is irradiated with light of different frequencies.



1.	draw a circuit diagram that was use	ed to obtain the results used to pl	ot the graph	(3marks)
		п		ş
			6.	
			Œ	
	12	9	-é	
10		\$9		
		o g		
ii.	from the graph determine		34	
	L the threshold frequency			(1mark)
	97E - II	85		,,
	and Marketon	**************************************	1883 113 113 113 113 113 113 113 113 113	
, . <b>.</b>	950 850000 1950, 211122111 1111 1111 1111 1111 1111 11			
	II. Planck's constant h given the		- 10 -	Digitization and extra
78	n. Timber's constant it given to	nat electronic charge e = 1.602x1	.0°°°C	(3marks)
********			16	
	. 1			NEE CHEERINE
********				
		······································	***************************************	
				₹.
	Manyam	FRANCHI	3E	
	Discover	!Learn!Apply	¥	
	III. The work function of the me	etal used	45	(2marks)
			19	
		·	*************	********
			***************	
W. W	q		ne en les etroueness teadibles (#1900)	
		***************************************	,	***********

THE END