**MWAKICAN MARKING SCHEME PHYSICS FORM 3 TERM 3 2016**

1. (a) The ammeter reading decreases.

(b) The resistance of the metal increases with increase in temperature.

1. 5 + 1 = 360

 Ѳ

Ѳ = 360 = 600

 6

1. (a)



(b) - Direction of magnetic field.

* Direction of current in the conductor.



1. On earthing negative charges are repelled to the ground. When the rod is withdrawn, the leaf is left with a net positive charge. The leaf rises.
2. Speed = 2d

 t

 t = 500 = 2.5 s

 20

 Speed = 2 x 400 = 320ms-1

 2.5



1. Hydrogen gas bubbles at the cathode.

 - White deposit forms at the plates.

 - Relative density of the electrolyte drops.

1. (a)(i)



1. From N - S ; around conductor
2. - Nail is hammered in North – South direction.

 - Earth’s magnetic field aligns dipoles of the nail in one direction.

1. (i) Focal plane is a plane passing through the focal point and perpendicular to

 the principal axis.

(ii) Produces as - Upright image

 - Magnified image

 - Virtual

**SECTION B**

1. a.
	* 1. Frequency not affected
		2. Speed reduces
		3. Wavelength reduces
	1. $f=\frac{v}{ƛ}=\frac{0.02}{0.08}=1.5Hz$
	2. Stationary wave Progressive wave
* No energy is transferred from source - energy is transferred from source
* Wave form does not appear to move - wave form moves away continuously
	1. (i) Time taken to make one complete oscillation

 10 x 10-2 seconds

(ii) F = I

 T

 I

 10 x 10-2 = 10Hz

(iii) V = λf

 X = v

 f

 = 200 = 20m

 10

* 1. Mechanical waves require material medium for transmission but electromagnetic waves do not
1. a.
* Rectification smoothing circuits
* Turning circuits
* Camera flash

(any one correct)

b.i. $\frac{2×8}{2+8}=\frac{16}{10}=1.6µF$

 1.6+3.2=4.8µF

 $C\_{T}=\frac{5×4.8}{5+4.8}=\frac{24}{9.8}=2.45×10^{-6}F$

 ii. Q=CV

 $2.45×10^{-6}×12=2.94×10^{-5}C$

 Charge on $3.2µF=\frac{2}{3}×2.94×10^{-5}$

 =1.96 X $10^{-5}$

 iii. P.d on 5µF =$\frac{Q}{C}=\frac{2.94×10^{-5}}{5×10^{-6}}=5.88V$

 iv. Energy = ½ CV2

 = ½$×2×10^{-6}×6.12^{2}$

 =3.75 X $10^{-5}$

c. - Area (cross sectional area)

 - length of a conductor

1. (a) A current flowing through a conductor is directly proportional to the potential difference across it provided the temperature and other physical conditions are kept constant.

(b) 1 - 1 + 1 + 1 = 5 + 15 + 3 = 23

 RT 3 1 5 15 15

 RT = 15 = 0.6522 Ω

 23

C(i) 3 + 20 x 30 = 3 + 60 = 4.2Ω

 20 + 20 50

(ii) I = V = 1.8 = 0.428 A

 R 4.2

(iii) V = 1R = 0.428 x 3 = 1.2857 V

1. a) The ratio of the sine of angle of incidence to the sine of the angle of refraction is constant.

(b) P = Real depth

 Apparent depth

 1.56 = 10

 X

 1.56 x = 10

 X = 10 = 6.410

 1.56

 Vertical displacement = 10 - 6.410 = 3.59cm

(c)(i) n = Velocity of light in vacuum

 Velocity of light in medium

 n = 3.0 x 108

 1.94 x 108

 = 1.546

(ii) I = 1.546

 Sin C

 Sin C = 1

 1.546

 C = 40.300

(d) - Minimal energy loses due to total internal reflection.

 - Large quantity of data can be converted per second or unit time.

 - Its flexible.