MARKING SCHEME

FORM FOUR

232/2
PHYSICS
PAPER 2
TRIAL 2, 2019

SECTION A

1. Let the angle be x

$\frac{360^0}{x} - 1 = 7$ ✓ 1 ; $\frac{360^0}{x} = 8$ $8x = 360^0$ ✓ 1 ; $X = 45^0$ ✓ 1 ;

2. The leaf diverges ✔ (1mk) Negative charges from electroscope flows to the sphere leaving +ve charges on the electroscope thus there is divergence. ✔ (1mk)

3. The rule moves anticlockwise, the soft iron core gets magnetized with the upper end having a south pole and hence attracts the north pole of the magnet.

4. a) convex mirrors have a wider field of view ✓ 1
   b) – the images are virtual ✓ 1
   - the images are erect/upright ✓ 1

5. (i) Polarization is the formation of hydrogen bubbles on the anode (copper plate) while local action is the eating away of the zinc plate by acid

   (ii) Depolarizer / reduce polarization ✓1 any one oxidizes hydrogen to water

6. - Must have the same amplitude,
   -Must have same frequency;

7. Distance to barrier x m
   Dist covered by sound 2 x ✓1
   Distance = velocity x time;
   $2x = 330 \times 0.6$ ✓1
   $x = \frac{330 \times 0.6}{2}$
   $x = 99m$ ✓;

8. A – south Pole ✔ (1mk)
   B – South pole ✔ (1mk)

9. Current flows in the circuit and the electromagnet gets magnetized ✓ attracts A which in turn moves up to establish the contacts. This completes the bell circuit hence the bell ring

10. Q = It

$= 12 \times 2.5 \times 60$ ✓ 1
$= 1800C$ ✓

11. a) Light is a form of energy that enables people and animals to see and plants to manufacture their own food through photosynthesis

    b) images formed are inverted/upside down

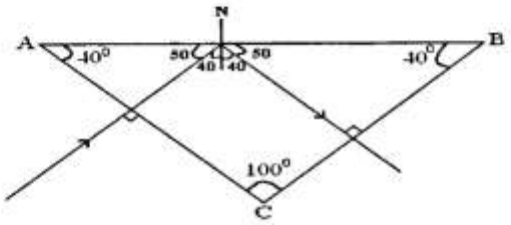
SECTION B.

12. (a)Time taken for n number of claps. The claps should concide with the echos;

(ii) $\sin c = 1/\eta \Rightarrow c = \sin^{-1}(1/\eta)$

$= \sin^{-1}(1/1.5)$

$= 41.81$



14. (a) (i) Capacitance is the ratio of charge to the p.d; ✔ (1mk)

Its unit is the farad; ✔ (1mk)

(ii) Separation of plates
- Dielectric material
- Area of the plates

3mks

(ii) Series arrangement

$\frac{1}{C} = \frac{1}{4} + \frac{1}{2} = \frac{3}{4}$ ✔ (1mk)

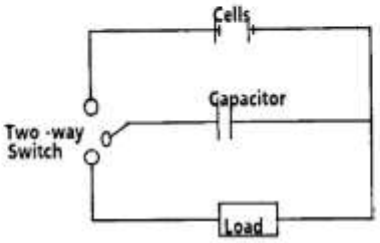
$C = \frac{4}{3}\mu f$ ✔ 1mk

Parallel arrangement

$\frac{4}{3} \times 2 = \frac{8}{3}\ \mu f$ ✔ 1mk

$= 2.667 \times 10^{-6}\ F$ ✔ 1mk

3mks any



15. (a) It states that the p. d in a circuit is directly proportional to the current provided, temperature and other physical conditions are kept constant. ✔ (1mk)

(b) $E = I V t$

$E = QV$ - $V = \frac{E}{Q}$

$= \frac{30}{20}$ ✔ (1mk)

$= 1.5\ V$ ✔ 2 mks

(ii) $Q = It$
$20 = I \times 5$ ✔ (1mk)
$I = 4A$ ✔ (1mk)
2mks

(iii) $V = IR$
$1.5 = 4 \times R$ ✔ (1mk)
$R = 0.375\Omega$ ✔ (1mk)
2mks

(c) (i) $\frac{I}{V} = \frac{r}{E}(\frac{I}{R}) + \frac{I}{E}$
$y = Mx + C$
$\therefore C = \frac{I}{E} = 0.65$ ✔ (1mk) $\therefore E = \frac{1}{0.65}$
$E = 1.538\ V$ ✔ (1mk) 2mks

(iii) $M = \frac{r}{E}$ $M = (\frac{2.25 - 0.65}{2.0 - 0})$ ✔ (1mk)
$= 0.8$
$\therefore M = \frac{r}{E} = 0.8$ (1mk)
$r = (0.8 \times 1.538)$ ✔
$\therefore r = 1.2304\ \Omega$ ✔ (1mk)

iv) P = 1V
= 4 X 1.5
= 6.0 WAHS

16. a) (i) Stationary waveforms do not move through therefore energy is not transferred from the source to some point away✓1

Progressive waveforms move through the medium away form its source and therefore energy is transferred from the source to some point away✓1

b) (i) This is the maximum position of the particles from the mean or disturbed position ✓1

(ii) I. $T = 2.0s$✓1

II. $f = \frac{1}{T} = 0.5Hz$ ✓1

c) $V = \lambda f$ $\lambda = \frac{v}{f}$ ✓1
$= \frac{340}{0.5}$ ✓1
$\lambda = 680m$ ✓1

d) Increase density of solid✓1
Reduce temperature of solid ✓1