SUNRISE EXAMS 2021

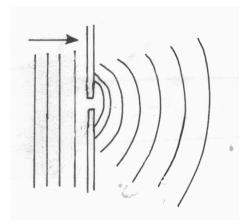
232/2 **PHYSICS** PAPER 2 MARKING SCHEME

1.

2.

- They acquire North poles at the ends thus they repel.
- 3. 4. i)

ii)



- 5. Light energy to electrical energy
- 6. i) Microwaves, infrared, visible light, x rays
 - ii) Observing objects
 - Taking pictures
- 7. Alkaline
- Produces higher current
- Lasts longer
- It is portable
- Less maintenance & care

8.
$$V = \frac{25}{t}, \Rightarrow S = \frac{Vt}{2}$$

 $S = \frac{330 \times 0.6}{2} = 99m$

9. Separation of colours of light from white light.

10
$$I = {}^{V}/_{R}$$

= ${}^{2}/_{6} = {}^{1}/_{3}$
= 0.33A

11.
$$an_g = \frac{3}{2}, an_o = \frac{6}{3}$$

$$\therefore on_g = on_{aa}n_g$$

$$= \frac{3}{6}x\frac{3}{2}$$

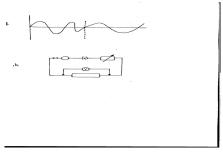
$$= \frac{9}{12} = \frac{3}{4}$$

$$= \frac{3}{4}or 0.75$$

- 12. Distance between the plates
 - Area of plates
 - Dielectric material used

SECTION B

- 13. a) For an atomic conductor p.d across the ends is directly proportional to current if temperature and other constants kept constant;
 - b) i)



Ammeter in series;

Voltmeter in parallel

Variable resistor in series

(apparatus must be workable)

- ii) Connect the apparatus as shown
 - Vary variable resistor such that I is certain value;
 - Record I in ammeter and V in Voltmeter;
 - Draw graph of V against I;

c) Parallel
$$\underline{I} = \underline{1} + \underline{1} + \underline{1}$$

R 6 4 8

$$\underline{I} = \underline{9}$$

R 12

$$R = 4 = 1^{-1}/_{3}\Omega$$

$$R_1 = 4 + 1^{1/3}$$

$$=5^{1}/_{3}\Omega$$

$$I = V/R = 4.5/5.33$$

$$= 0.844A$$

$$=3.377V$$

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

The distance between the civil and walls;

(ii) Sound has to travel to the walls and reflected back to the coil

Distance travelled is 2d;

For n claps there will be n echo's;

Total distance travelled = $n \times 2d$

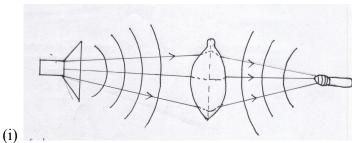
$$=\frac{2nd}{dt}$$

Speed of sound

(iii) 200m;

10m is short distance and timing will be inaccurate;

500m is too long for sound to travel through and be reflected back. Energy will have been lost along the way;



Wavelength maintained;

Wave form;

(ii) When the sound goes through the balloon it is focused to one point, hence changing the position the sound becomes less; (refracted)

$$V = f\lambda$$

$$340 = 1020 \times \lambda;$$

$$\lambda = \frac{340}{1020}$$
(iii) = 0.3333 m;

- (iii)
- C) (i) Destructive and constructive interference
 - (ii) Maximum amplitude or horizontal line
- (iii) Loud sound all through
- 15. (a) (i) Light must travel from denser medium to less dense medium.

Angle of incidence in the denser medium must be greater than critical angle in the less dense medium.

(b) (i)
$$\underline{\sin i} = n$$

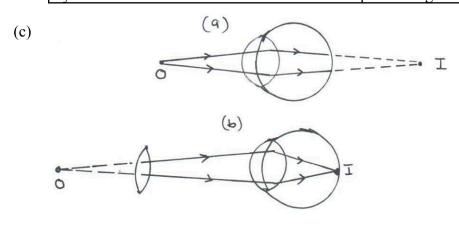
 $\sin r$
 $\underline{\sin 30}^{\circ} = 1.618$
 $\sin 18^{\circ}$
 $n = 1.618$
(ii) $\sin C = \underline{1}$
 n
 $\sin C = \underline{1}$
 1.618
 $C = \sin^{-1} 0.61804$
 $C = 38.17^{\circ}$
16.Intercept = $\underline{1}^{\circ}$
f
 $2.5 \times 10^{-2} \text{ cm}^{-1} = \underline{1}^{\circ}$
f
 $f = 40 \text{ cm}^{\circ}$





(ii) As a magnifying glass.

(iii)	EYE	CAMERA
	- Crystalline convex lens.	- Convex lens.
	- Choroids layer of eye is black	- Camera box is painted black inside.
	- Eye forms image in retina.	- Images formed on light sensitive film.
	- Iris controls amount of light entering the	- Diaphragm controls amount of light
	eve.	entering the camera.



(d) (i)
$$\frac{1}{V} + \frac{1}{U} = \frac{1}{f} \qquad f = -20$$

$$U = +10$$

$$\frac{1}{V} = \frac{-1}{f} - \frac{1}{U}$$

$$= \frac{-1}{20} - \frac{1}{10} = \frac{(-1-2)}{20}$$

$$= \frac{-3}{20}$$

$$V = 6.67 \text{ cm } \checkmark^{1}$$

(ii)
$$\operatorname{Im} age \ height = \frac{\operatorname{Im} age \ dis \tan ce \times Object \ height}{Object \ dis \tan ce}$$

$$HI = \frac{V \times H_o}{U} \checkmark^1$$
$$= \frac{6.67 \times 10.5}{10}$$
$$= 7.00 \text{cm} \checkmark^1$$

(iii)
$$M = \frac{V}{U} = \frac{6.67}{10} = 0.667 \text{cm} \checkmark^{1}$$