**MARKING SCHEME - PHYSICS PAPER 2**

**MARCH/APRIL, 2021**

1.



1. They attract. √1
2. (a)



 (b) The cell suffers polarization and local action.√1

1. (a)



 (b) North pole√1

1. V = $\frac{2d}{t}$ √

330 = $\frac{2xd}{2.16}$

d = $\frac{330 x 2.16}{2}$

d = 356.4m

330 = $\frac{2xd}{4.75}$

d = $\frac{330x4.75}{2}$ √

= 783.75m

Distance between the wall = 356.4 + 783.75

 = 1140.15m √

1. (i) Microwaves, infrared, visible light, X-rays.

(ii) Observing objects

 Taking pictures.

1. P = v2/R

40 = (240)2/R

R = 57600/40

 = 1440Ω

1.

 

 Field – 1 mark (N – S; around conductor)

Force – 1 mark

1. (i) Bulbs X and Y light dimly. √1

 They are connected in series and resistance add up.

 Or Bulbs X and Y light with same brightness. The same current flows through them.√1

 (ii) Bulb X lights brightly while Y does not.

 Bulb Y is short circuited. √1

1. Air is warmer at upper layer. √1

Velocity of sound wave fronts will be higher in the upper layer than in the lower layer hence the waves will be refracted downward.

1. - More information can be transmitted at the same time.√1
* Flexible.
1. Circuit 1

E = V + Ir

E = 0.6 + 0.6r (1) √

E = 7.2 + 1.8r (2)

Equation 1 & 2

1.2r = 6.6

r = 5.8Ω √

**SECTION B – 55 MARKS**

1. (a)



1. I (i) T = $\frac{36}{20}$

 ƒ = $\frac{1}{T}$

 ƒ = $\frac{20}{36}$ √1

 = 0.5556Hz √

 (ii) v = ƒλ √

 = 0.5556 x $\frac{0.80}{4}$√1

 = 0.1111m/s √1

1. Waves of shorter wavelength are produced /more waves are produced (shorter wavelength).

c) (i) It provides coherent sources.√1

 (ii) Alternating dark and bright fringes.√1

 Dark fringes are due to destructive interference√1 while bright fringes are due to constructive √1 interference

 (iii) (I) Increased distance between the fringes. √1

 (II) Fringes will be closer.√1

1. (a) (i) Light must travel from optically denser medium to less dense medium.

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

 (b) (i) $\frac{\sin(i)}{\sin(r)}$ = n

 n = $\frac{\sin(40)}{\sin(18)^{0}}$

n = 2.080

 (ii) sin C = $\frac{1}{n}$ Allow T.E (Transfer of Error)

sin C = $\frac{1}{2.08}$

 C = sin-1 0.48077

 C = 28.740

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

(b) v = IR √1

 12 = 6R √1

 R = $\frac{12}{6}$

 R = 2Ω √1

(c) (i) Slope = $\frac{Δ v}{Δ I}$

 Resistance = slope √1

 Slope = $\frac{1-0.5}{0.02-0.01}$ √1

 = $\frac{0.5}{0.01}$

 = 50Ω

 Resistance = 50Ω √1

 (ii) It obeys Ohm’s law √1

 Current is directly proportional to voltage √1

(d) Cross-section area /thickness of √1 the conductor.

 Length of the conductor √1

 Temperature (Any 2 correct)

1. (a) (i)



 (ii) As a magnifying glass

 (b)

 

 (c) (i)

 

1. (a) Charge per unit voltage √1

(b) Area of overlap √1

 Distance of separation √1

 Type/Nature of dielectric (Any 2 correct)

(c) (i) CP = 5 + 6

 = 11μF √1

Cλ = $\frac{11 x 4}{15}$ √1

Cλ = 2.933μϝ √1

 (ii) Q = Cv

 = 2.933 x 12 √1

 = 35.196μc √1

 Charge stored in 4μϝ capacitor = 35.196μc

 (iii) Voltage across 4μϝ capacitor = $\frac{35.196}{4}$

 = 8.799 √1

 p.d across 5μϝ capacitor = 12 – 8.799 √1

 = 3.201 √1

 (d) - In rectification to smoothen output

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