

**THE SUCCESS PATH EXAMINATION COUNCIL (SPEC)**

**Paving the Way to Success**

**232/2 PHYSICS (Theory)**

**PRE-MOCK EXAMINATIONS 2026**

**MARCH 2026**

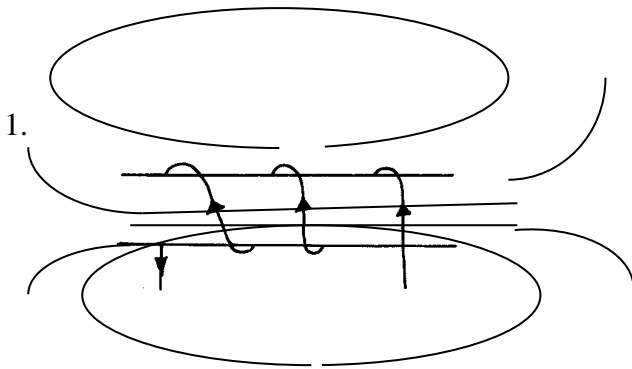
**Time: 2 hours**



**Paper 2**

**232/2  
4992104**

**MARKING SCHEME**



**2. SIMILARITIES**

- choroid ( black pigment) / painted black inside
- convex lens
- Retina/film screen for the image
- iris/diaphragm controls light entering

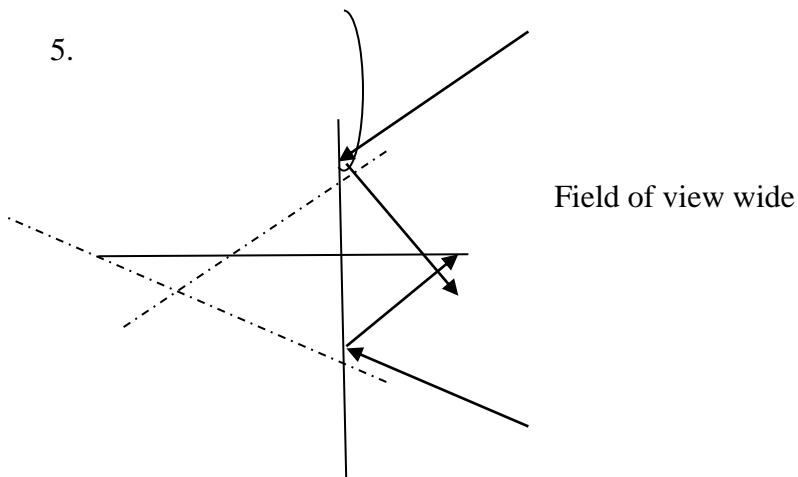
**DIFFERENCES**

- rigid/flexible
- zooming/accommodation
- fovea is fixed/film is removable
- eye fluids refract/air only in camera

3. –frequency

4.  $\text{Speed} = \text{distance} / \text{time}$   
 $= 2(200)/1.16$   
 $= 344.8 \text{ m/s}$

5.



6.  $V = IR$

Current thro' 3 ohms

$$I = 12/7 \text{ Amps}$$

$$\text{Therefore} = 12/7 \times (3)$$

$$= 5.14 \text{ V}$$

7. P.E  $\rightarrow$  K.E -  $\rightarrow$  Electrical

8. UV Light, X-RAYS, Gamma rays

9. Solar

10. Hydrogen gas forms around copper plates insulates blocking movement of current

11. Magnifies images, erect images

12. Only Real images caught on screen

13. B

Requires a smaller current to reach saturation

Easily magnetized and demagnetized

### Section B

14. (a) At  $\frac{1}{f}$  intercept,  $\frac{1}{v} = 2.5 \times 10^{-2} \text{ cm}^{-1} \checkmark 1$

$$\frac{1}{f} = \frac{1}{u} + \frac{1}{v}$$

$$= 2.5 \times 10^{-2}$$

$$\therefore f = \frac{1}{2.5 \times 10^{-2}} \checkmark 1 \frac{1}{0.025} = 40 \text{ cm} \checkmark 1$$

b) i) Adjust the position of the lens until a sharp image of the flame is observed  $\checkmark 1$

- Record the object distance (u) and the image distance (V)

- Repeat with different object positions  $\checkmark 1$

- Use the relation  $f = \frac{uv}{u+v}$  to determine f  $\checkmark 1$

ii) Diverging lens produces a virtual image which cannot  $\checkmark 1$  be formed on a screen

15. a). Refractive index is the bending of light owing to change in velocity at the interface.

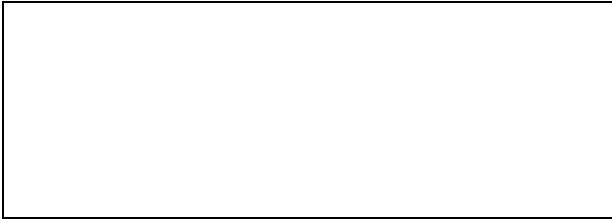
**b i).**  $n_1 = \frac{\sin i}{\sin r}$

$$n_1 = \frac{\sin 40}{\sin 24} = 1.5804$$

**b) ii).**  $n_1 = \frac{1}{\sin C}$

$$\sin C = \frac{1}{1.5803} = 0.6328$$

$$= 39.26^\circ$$



$$\text{b). iii) } \cdot \quad n_2 = \frac{\sin 24}{\sin 26}$$

$$\cdot \quad n_2 = \frac{1}{\sin C} = 0.92784$$

$$= 68.1^\circ$$

iv) .

$$n_2 = \frac{\text{velocity of light in air}}{\text{velocity of light in medium 2}}$$

$$n_2 = n_1 \times n_2$$

$$= 1.5803 \times 0.92784$$

$$n_2 = 1.4662$$

$$1.4662 = \frac{3 \times 10^8}{v \text{ in medium 2}}$$

$$\text{velocity in medium 2} = 2.0461 \times 10^8 \text{ m/s}$$

16. (a) For **transverse wave** – vibration of particles is **perpendicular** to direction of wave travel while for **longitudinal wave**, vibration of particles is **parallel** to the direction of wave travel.

b(i)

$$f = \frac{30}{60} = 0.5 \text{ Hz} \checkmark 1 \checkmark 1$$

(ii)

$$v = \frac{6}{2} = 3 \text{ m/s} \checkmark 1$$

$$\lambda = \frac{v}{f} = \frac{3}{0.5} = 6 \text{ m} \checkmark 1$$

(c) i Transverse

(ii) 20cm or 0.2m

(iii) 60cm

(iv) One complete wave.

(d) Interference of two waves constructively or destructively (adding up of waves amplitudes)

(e)i Coherent –identical waves (same phase relation) same wavelength, same amplitudes, same frequency

(ii)  $\Delta = \lambda$

17.

a. Is the opposing to flow of current in a substance

b. Potential difference is shared equally i.e  $240/40 = 6V$ 

$$V = IR \qquad 12 = (250 \times 10^{-3})(40R)$$

$$R = (12)/(40 \times 250 \times 10^{-3}) \qquad R = 1.2 \text{ Ohms}$$

c. X – Voltmeter, Y – milliammeter, Z – Diode

d. Barrier potential=0.7V

An applied more than 0.7V causes a current to flow through the diode

The applied voltage opposes the barrier created at the junction as majority charge carrier cross

$$I = V/R \qquad R = V/I \qquad = 0.7/0.1 \qquad = 7 \text{ ohms}$$

18.

a.  $6\mu F$ ,  $1.5\mu F$ b.  $6V$ ,  $Q = CV \qquad = 6 \times 6\mu \qquad = 36\mu C$ c.  $E = 0.5QV \qquad = 0.5 \times 6 \times 10^{-6} \times 6 \qquad = 18 \times 10^{-6} J$