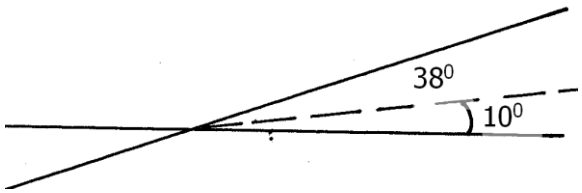
TERM 2 2025
MAY 2025
232/2
PHYSICS
Paper 2
MARKING SCHEME

1	A It has stronger magnetic field than B	✓1 ✓1
2.	(i) Magnetic material (ii) – using larger current - Increasing the no of turns - Using more loader arms	✓1 ✓1 ✓1 Any two
3.	Trees absorb sound	✓1
4.	 $90 - 38 = 52^0$	
5.	70Ah 60Ah - Plates with large surface – smaller surface area plates - Many plates hence bigger – A few plates hence look smaller	
6.	E = IR + Ir 1.5v = 0.5 x 2.7 + 0.5r 1.5 – 1.35 = 0.5r r = 0.3Ω	
7.	λ = 30/3 = 10m f = v/λ = 20/10 = 2m/s	✓ Formular ✓ Substitution ✓Answer
8.	- Biconvex lense - Because the grandfather is having long sightedness eye defect	✓1 ✓1
9.	- Leaf divergence increases - Like charges repel	✓ Correct Observation ✓ Reason No mark if the observation is wrong
10. (a)	- Increase the area of overlap of the plates - Decrease the distance between plates	✓mark ✓ mark
10. (b)	Total capacitance in parallel = 2 + 3 = 5 μ F Effective capacitance = C_T = (5 x 1.5) / (5 + 1.5) = 1.154 μ Total Charge stored $Q_T = C_TV$ = 10 x 1.154 = 15.54 μ F Charge stored by 1.5 μ F Capacitor = total charge = 15.54 μ F	✓ mark for CT ✓mark for QT ✓mark
	SECTION B	
11.	(a) (i) The ratio of the sine of angle of incidence to the sine of angle of refraction is a constant for a pair of media (ii) – Do not absorb light energy like mirrors - Not affected by thickness as mirrors - Do not wear off like the peeling of silvering on mirror.	✓1

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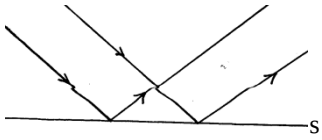
	(b) (i) $k_n w = k_n a \ a_n w$ $= \frac{1}{1.44} \times 1.33 = 0.9236$ (ii) $i = 70^0$ $\frac{\sin i}{\sin r} = 0.9236$ $\sin r = \frac{\sin 70^0}{0.9236} = 1.0174$ r is greater than 90^0 hence the light reflection  (iii) The different colours travel at different velocities hence would have different angles of refraction and are dispersed (iv) The eye would see a spectrum since the light rays are dispersed in the kerosene layer and are internally reflected at the kerosene – water surface the eye would see a spectrum at the surface	
12.	(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) (i) emf of the battery equal to v intercept 9.2V lmk (ii) internal resistance = gradient of the graph . gradient $r = 2.5\,3\,\Omega$ 3mks (b) (i) The work done in driving charges through the coil is high due to its resistance. This energy is converted into heat in the coil (ii) $V = IR \quad R = \frac{V}{I}\checkmark \quad = \frac{12V}{2.4}\checkmark$ $= 5.0\,\Omega$ (iii) $H = VIt$ $H = 12 \times 2.4 \times 60$ $= 1728J$ (iv) – Using a source with higher emf - Reducing the length of the coil $= P = \frac{V^2}{R}$	✓1 ✓1 ✓2 ✓1 ✓1 ✓1 ✓1 ✓1
13.a)	i) In transverse wave, the vibration of particles is perpendicular to the direction of travel of the wave but in longitudinal the vibration is parallel to the direction of the wave travel✓1 ii) -Sound wave requires medium for transgression but e.m waves does not require medium.✓1 -Sound wave is longitudinal and e.m wave is transverse.✓1	
b)	i) $V = \frac{2d}{c}$ ✓1 $= \frac{(2 \times 400)m}{2.5s}$ ✓1 $= 320$ /s✓1 ii) $320 = 2\,\frac{2(x\,400)}{4.5}$ ✓1 $1280 = 2x - 800$ $2080 = 2x$ $1040 = x$ $\therefore x = 1040$✓1m	
c)	i) Produce coherent sources of light✓1 ii) Alternating dark and bright fringes✓1 are observed on the screen on both sides of the central brighter fringe✓1 iii) i) Dark and bright fringes get closer✓1 ii) A full spectrum is observed✓1	

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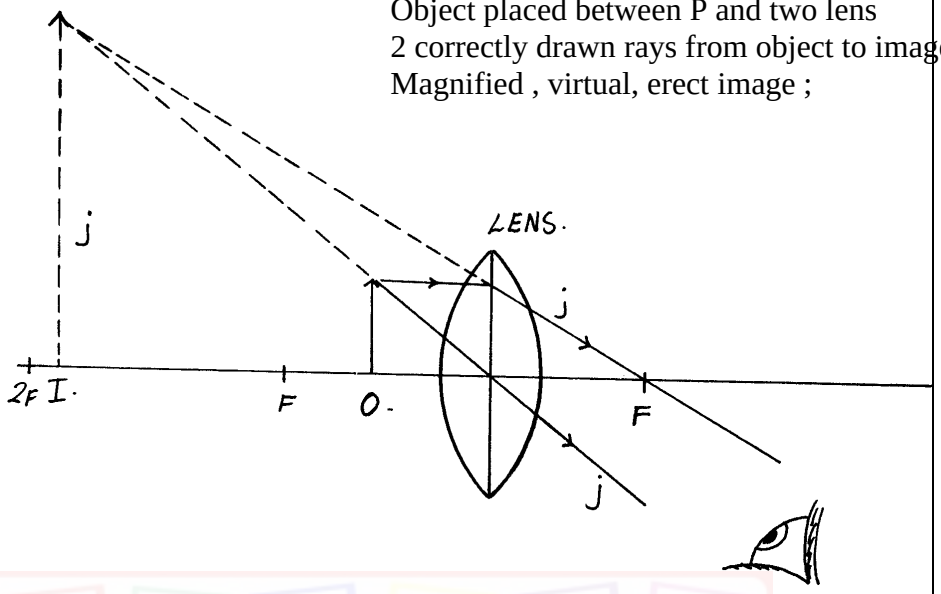
14 **a)**



Object placed between P and two lens
2 correctly drawn rays from object to image ;;
Magnified , virtual, erect image ;

b)

We have $f = \frac{uv}{v + u}$

But $m = {}^{v}/_{u}$;

$u = {}^{v}/_{m}$

Substitution v/m for u we have ;

$F = \frac{v}{m + 1}$;

Re – arranging we have $m = {}^{v}/_{f} - 1$;

c)

$u_1 = 10$ cm, $f_1 = 5$cm, $v_1 = ?$

$1/v_1 + 1/u_1 = 1/f_1$

$1/v_1 + 1/10 = 1/5$

$v_1 = 10$ cm ;
$u_2 = ?$ $f_2 = 10$ cm , $v_2 = 20$ cm
$1/v_2 + 1/u_2 = 1/f_2$
$^{1}/_{20} + {}^{1}/U_2 = {}^{1}/_{10}$
$u_2 = 20$cm ;
$d = v_1 + u_2 = 10$cm $+ 20$cm
$\therefore d = 30$ cm ;

15.

a) -Commutators / split - rings ✓1

-They are the split - rings which reversed the current in the coil every half-cycled

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and hence allow rotation to continue. ✓1

b) They provide electric connection to the coil. ✓1

c) -The sides AB and CD of the coil are current carrying conductors in a strong magnetic field which is perpendicular to the wires. . ✓1

-AB has a downward force while CD experience and upward force. . ✓1

-Overall the coil experiences an anticlockwise motion.

c) -Increasing the amount of current. ✓1

-Increasing the strength of magnetic field. ✓1

-Using more turns in the coil. ✓1

-Winding the coil on a soft iron core. ✓1

(Any one)

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