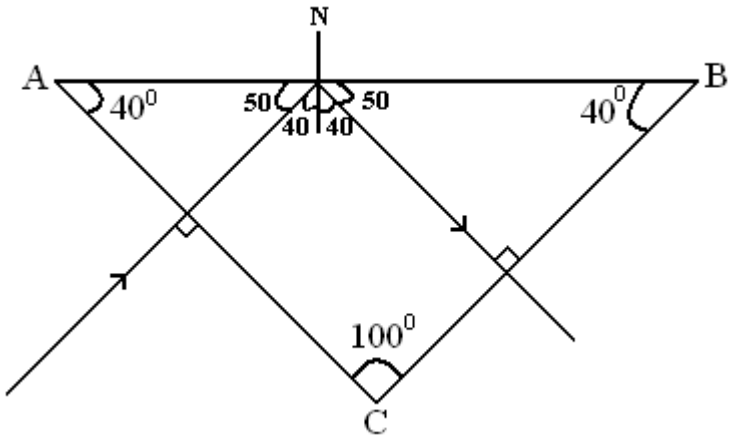
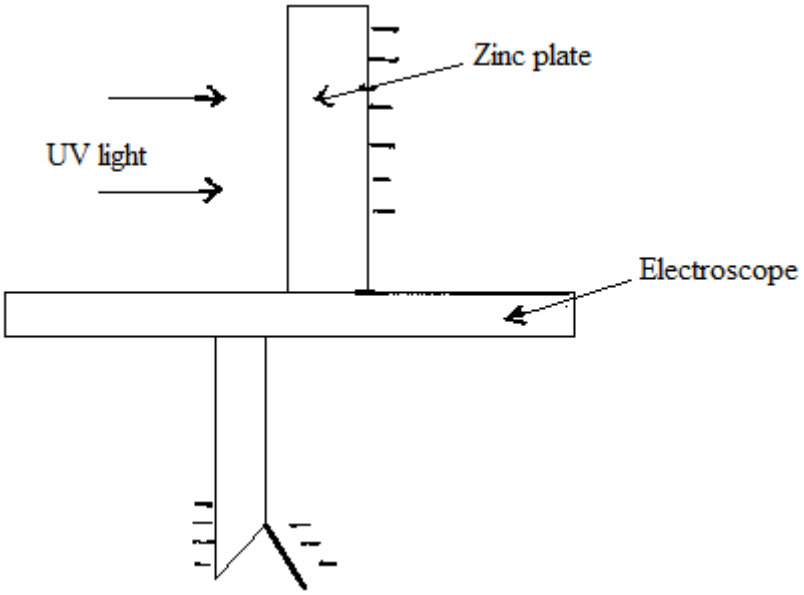
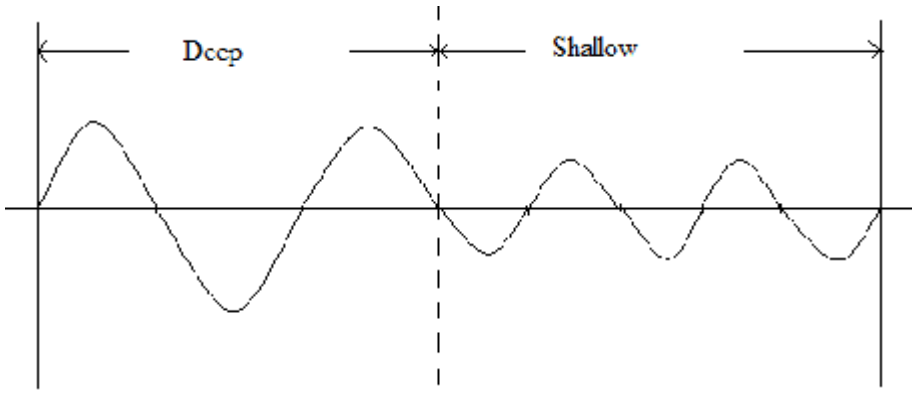
MARKING SCHEME LARI SUBCOUNTY MOCK PHYSICS 232/2- 2019

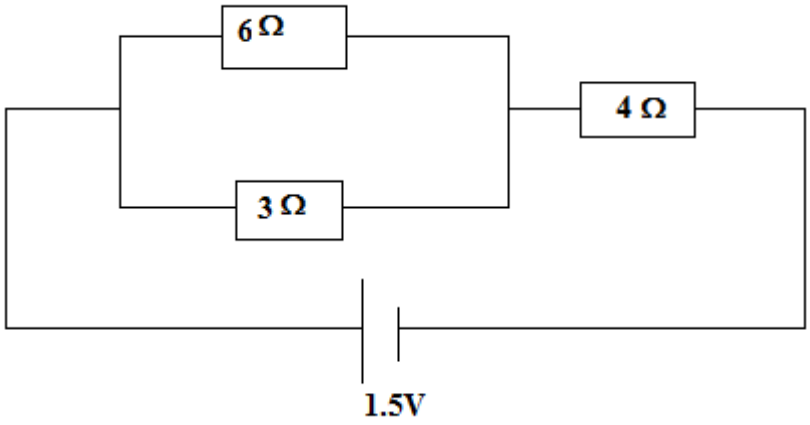
NO		MARK/REMARK
1	Frequency	1 mark
2		2 marks
3	$eV = \frac{hc}{\lambda}$ $1.6\times10^{-19}\times60000 = \frac{6.63\times10^{-34}\times3.0\times10^{8}}{\lambda}$ $\lambda = \frac{6.63\times10^{-34}\times3.0\times10^{8}}{1.6\times10^{-19}\times60000}$ $= 2.072\times10^{-34}\times10^{8}\times10^{19}$ $= 2.072\times10^{-7}M;$	(1mark) (1mark) (1mark)
4	Distilled water is added to an accumulator to maintain the density of sulphuric acid at the normal value	
5	A Ultra violet Use: - Cooking (warming) - Satellite communication	any one ✓ 1
6	similarity between the eye and the camera – Both the eye and the camera have convex lenses – The choroid layers of the eye is black and the camera box is also painted black inside – The eye has the retina and camera has a light – sensitive film both for image formation – The eye iris and camera diaphragm both of which control the amount of light entering the eye Differences – The focal length of the eye lens is variable while that of camera is	Any one (1 mk) Any one (1 mk)

	fixed – Camera can have variable image distance while the eye has a constant image distance - Only one photograph can be taken at a time when the shutter of the camera opens the eye constantly forms changing pictures	
7	The leaf falls ; Negative charges induced on the pin (from the earth)	
8	r = 2 f given that r = 2 f then $f = \frac{r}{2}$ $\therefore f = \frac{80}{2}$ cm = 40 cm From the mirror formula $\frac{1}{f} = \frac{1}{v} + \frac{1}{u}$ Multiply all sides by u $\frac{u}{f} = \frac{u}{v} + 1$, but magnification $m = \frac{v}{u}$ $\therefore \frac{u}{f} = \frac{1}{m} + 1$ m = ½ $\rightarrow \frac{u}{40\text{ cm}} = 2 + 1$ u = (40 x 3) cm u = 120 cm ∴The object is positioned at 120 cm from the mirror	
9	- Soft x-ray have a longer wavelength than hard x-ray; - Hard x ray are more penetrative than soft x-rays;	1 mark 1 mark
10	Junction in Y is reverse biased while junction is X is forward biased ; The potential barrier in circuit Y is thus very high in Y low in X hence current flows in X and not in Y ; or forward current (majority carriers) is higher than reverse current (minority carriers)	
11	$\frac{Np}{Ns} = \frac{Vp}{Vs}$; ✓1 $Ns = \frac{480 \times 9}{240}$ = 18; ✓	
12	-Must have the same speed, -Must have same frequency;	Any two (2 marks)

	-Same or nearly equal amplitude	
13	a) Induction of emf in a coil by changing current in another coil near it. b) i) Strength of magnet ii) Number of turns iii) Winding of a coil on soft iron core c) i) A – secondary coil B- Primary coil C- Capacitor ii) It prevents wearing of make and break contracts d) i) Input = output $\frac{80}{100}$ x 240 I = 120 x 12 $I = \frac{120 \times 12}{192} = 7.5A$ ii) Eddy currents Resistance in wires Flux linkage loss	1 mark Any two 2 marks 3marks 1 mark 3 marks Any two 2 marks
14	a) The spontaneous disintegration of the nucleus of a radio nuclide with emission of particles b) i) B and D are isotopes A and C are isobars ii) A and C $^{234}_{89}A \xrightarrow{\beta} {}^{234}_{90}C + {}^{0}_{-1}e$ iii) Subject the sheets in the path of the radiation. An increase in count rate implies a decrease in thickness. For uniformity the count rate should & remain constant. Beta particles are used. b) i) 40 seconds $N_0 \xrightarrow[20s]{} \frac{No}{2} \xrightarrow[20s]{} \frac{No}{4}$ ✓1 ii) Less by✓1 iii) Radioactive decay is independent of temperature, pressure or chemical combination. ✓1	
15	a) i) Emission of electrons from a surface when irradiated with radiation of sufficient Frequency;	✓1 Workability of set up ✓1 Labelling ✓1

	 (II) Irradiate the Zinc plate with uv light ; ✓ Electrons are ejected and hence leaf diverge reduces. -Nature of emission is thus electrons✓ b) i) - Work function of metal ; ✓ - Freq. of irradiation ; ✓1 h = grad x e; ✓1 h = $\frac{(3.6 - 0);}{(14 - 5.2) \times 10^{14}}$ x ✓-1.6×10^{-19}; ✓1 h = 6.545×1^{-34}; ✓1 $\frac{ø}{e}$ = y – intercepts ; ø = $-2.1 \times -1.6 \times 10^{-19}$ = 3.36×10^{-19} J ✓1	***h = Grad; xe Extract; Subst ; Ans;*** ***Ø = extract***;
16	a) i) *Longitudinal* – particles of transmitting medium vibrate in the direction of the wave. or a plane polarized. *Transverse* – particles of transmitting medium vibrate at right angles to direction of the wave.; ii) - Sound requires material medium , e.m do not ; any one -Speed of sound is lower than that of e.m b) i) 2.5 x v = 400 x 2 ; or $v = \frac{d}{6} = \frac{400 \times 2}{2.5}$ = 320m/s v = 320 m/s ; ii) $t = 2\left(\frac{x - 400}{320}\right)$; or 2d = speed x time = 320 x 4.5 = 1440	

	d = $\frac{1440}{2}$ t= 2.5 + 2 ; 2 ($\frac{x - 400}{320}$) = 2.5 + 2 x = 1120 m ; x = 720 + 400 = 1120  ii) Velocity reduces; and wavelength decrease ; since the frequency remains the same. No loss of energy therefore amplitude does not change.	
17	. a) i) 15 μ c ii) Q = It I = $\frac{Q}{T}$ = $\frac{44 \times 10^{-6}}{20}$ = 2.2×10^{-6} $\underline{2.2\ \mu A}$ iii) At T = O , Q = 150 μ c Initial charge = 150 μ c b) i) Distance between the plates ii) Area of overlap of the plates iii) Nature of the dielectric	



C)

Resistors in parallel

$$\frac{1}{R} = \frac{1}{6} + \frac{1}{3}$$

$$\frac{1}{R} = \frac{3+6}{18}$$

$$= 18/9$$

$$= 2\ \Omega$$

ii) Resistors in series

$$2\ \Omega + 4\ \Omega$$

$$= 6\ \Omega$$

Equivalent resistance = 6 Ω