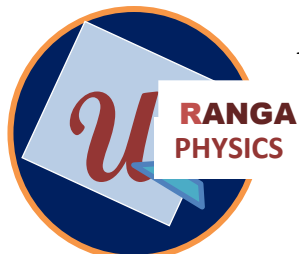


URANGA PHYSICS EXAMINATION



Kenya Certificate of Secondary Education

232/2 PHYSICS Paper 2

(Theory)

FORM 3

KNOWLEDGE CONDENSED

4TH EDITION (FEBRUARY 2022) – TIME: 2 Hours

MARKING SCHEME.

1	a) A - for Ammeter √1 V - for Voltmeter √1 b) Device S is used for controlling current √1	3
2	• Use the concave mirror to focus a clear image of a distant object on the white screen. √1 • Use the metre rule to measure the distance between the mirror and the screen. √1 • Repeat the focusing and measure other two values of distance between mirror and screen. √1 • Find average of the distances above, this is the focal length of the concave mirror. √1	4
3	Convex mirrors provide a wider field of view than plane mirrors. √1	1
4	$\frac{12m}{4s} = 3m/s$ √1	1
	$T = \frac{1}{f} = \frac{1}{2} = 0.5s$ √1	1
	$wavelength = \frac{velocity}{frequency} = \frac{3}{0.5}$ √1 = 6m √1	2
5	First path is total internal reflection Reflected ray is passes through second phase unrefracted/ straight. √1√1	2

6	$\frac{v}{u} = \frac{h i}{h o} \sqrt{1}$ $\frac{10}{600} = \frac{16}{h o} \sqrt{1}$ $h o = 9.60 m \sqrt{1}$	3
7	Leaf falls because the rod repels negative charges towards the leaf which neutralize the positive charges on it and falls, the leaf rises because of further repulsion of negative charges to the leaf which makes it more negative. $\sqrt{1}$	2
8	a. X- carbon rod $\sqrt{1}$ Y- Zinc casing $\sqrt{1}$ b. To reduce polarisation $\sqrt{1}$	3
9	Higher concentration of charge at the tip of then wire ionizes air $\sqrt{1}$, positive air ions are repelled away from the wire which blow the flame as electric wind. $\sqrt{1}$	2
10	Wavelength reduces $\sqrt{1}$	1
		25mks
11	a. -Area of overlap between the plates. $\sqrt{1}$ -Distance of separation between the plates. $\sqrt{1}$ -Nature of dielectric material used. b. - Initially the milliammeter reads a maximum value of current which reduces to zero $\sqrt{1}$ - Voltmeter reading rises from zero to a maximum. $\sqrt{1}$ $\frac{1}{4\mu F} + \frac{1}{1\mu F + 3\mu F} = \frac{1}{C} \sqrt{1}$ $\frac{1}{C} = \frac{1}{2\mu F} \sqrt{1}$ $C = 2\mu F \sqrt{1}$ $Q = CV \sqrt{1}$ $Q = 2\mu F \times 12V \sqrt{1}$ $Q = 24\mu C \sqrt{1}$	13

	$V = \frac{Q}{C} = \frac{24\mu C}{4\mu F} \checkmark 1$ $V = 6.0V$ $V = 12V - 6V \checkmark 1$ $\underline{V = 6.0V} \checkmark 1$	
12	a. Ohms law states that the current through a conductor is directly proportional to the potential difference across it, provided the temperature and other physical conditions are kept constant. $\checkmark 1$ b. I. work done per unit charge across the battery due to internal resistance of the battery $\checkmark 1 \checkmark 1$ II. $E = 12V \checkmark 1$ III. $R = \frac{V}{I} = \frac{10}{0.8} \checkmark 1 = 12.5\Omega \checkmark 1$ IV. $E = IR + Ir$ $12 = 10 + 0.8r \checkmark 1$ $r = 2.5\Omega \checkmark 1$ c. I. $E = 9.2V, \checkmark 1$ the voltage when current is zero. II. $slope, S = \frac{9.2-0}{0-5.5} \checkmark 1 = -1.6727\Omega \checkmark 1$, slope S represents the Internal resistance of the battery. $\checkmark 1$	12
13	a. – the incident ray, the normal and the reflected ray at a point of incidence, all lie on the same plane. $\checkmark 1$ b. Correct reflected ray with arrow, and normal shown, $\checkmark 1$ $r = 42 \checkmark 1$	12

	c. $n = \frac{360}{\theta} - 1$ $19 + 1 = \frac{360}{\theta} \quad \checkmark 1$ $\theta = 18 \quad \checkmark 1$ d. $n_1 \sin i = n_2 \sin \theta_2 \quad \checkmark 1$ $\frac{3}{2} \sin i = \frac{4}{3} \sin 20 \quad \checkmark 1$ $i = 17.698 \quad \checkmark 1$ e. I. Correct repeated reflections, $\checkmark 1$ II. Total internal reflection $\checkmark 1$ f. Correct rays $\checkmark 1$, location. $\checkmark 1$	
14	a. Like poles repel, while unlike poles attract each other. $\checkmark 1$ b. A magnet can attract any magnetic material not necessarily a magnet, but to identify a magnet, repulsion of like poles is a sure way. $\checkmark 1$ c. The soft iron is magnetized by induction $\checkmark 1$ and attracts back the pin, while the wooden block does not magnetise so the pin is attracted with ease. $\checkmark 1$	09

	d. N- points to the left. √1 e. Making compasses√1 Bicycle dynamos Generators Electric motors f. - Increasing current √1 - Increasing the number of turns of the solenoid√1 - Decreasing the length of the solenoid. g. Soft iron is easily magnetized and demagnetized. √1	
15	a. In longitudinal waves the particles vibrate parallel to the direction of the wave, while in transverse waves, the particles vibrate perpendicularly to the direction of the wave. √1 b. Using absorbent materials on the walls. √1 c. I. Y-Y or X-X or equivalent. √1 III. $frequency = \frac{Velocity}{wavelength} = \frac{330}{0.4} \sqrt{1}$ $= 825Hz \sqrt{1}$ d. I. One colour or wavelength light source. √1 II. To provide coherent waves/ same frequency. √1 III. A series of alternate bright and dark bands are formed on the screen. √1 IV. The spaces between the fringes also reduces. √1	09
		55
	Total	80.