ST FRANCIS GIRLS HIGH SCHOOL, RANGALA

PHYSICS PP2.

KCSE PREPARATION 2013.

NAME...

INDEX NO..

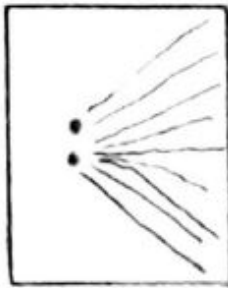FORM..

INSTRUCTIONS

Answere all the questions in the spaces provided.

Examiners use

1. In an experiment using a diffusion cloud chamber, three radioactive samples P, Q and R were used in the chamber one at a time. Figure 7 below shows the vapour trails observed on the base of the chamber for each sample.

sample P   sample Q   sample R

(a) Stating appropriate reasons, name the radiation produced by each sample

(i) Sample P   (1mk)

Reason   (2mks)

(ii) Sample Q   (1mk)

Reason(s)   (2mks)
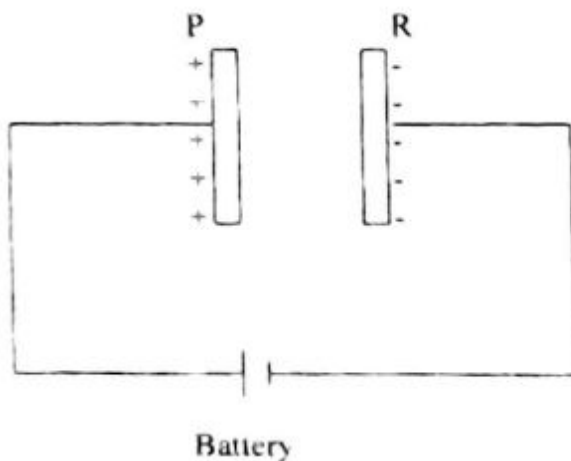
(iii) Sample R   (1mk)

Reason (s)   (2mks)

(b) An element $^{234}_{90}Z$ decays by emitting an Beta particle. If ^m_nA is the remaining nucleus determine by writing the the equation for the reaction the value of m and n.   (3mks)

2.   (a) State one use of capacitors.   (1mk)

(b) The figure 8 below shows a capacitor connected to a battery such that the plates P and R acquire the charges shown.

Battery

(i)   Indicate on the diagram (with an arrow), the direction of the flow of electrons during the process of charging   (1mk)

(ii) Explain how the process of charging the plates occurs.   (3mks)

(iii) When the battery is disconnected and the plates joined, the capacitor becomes discharged. Explain
how this happens. 3mks)

11.

(iv) State any one factor that will determine the capacitance between the plates P and R before
discharging. (1mk)

(v) In the circuit below $C_1 = 4\mu f$, $C_2 = 5\mu f$ and $C_3 = 3\mu f$. calculate the charge in each of the capacitors.
(4mks)

12V
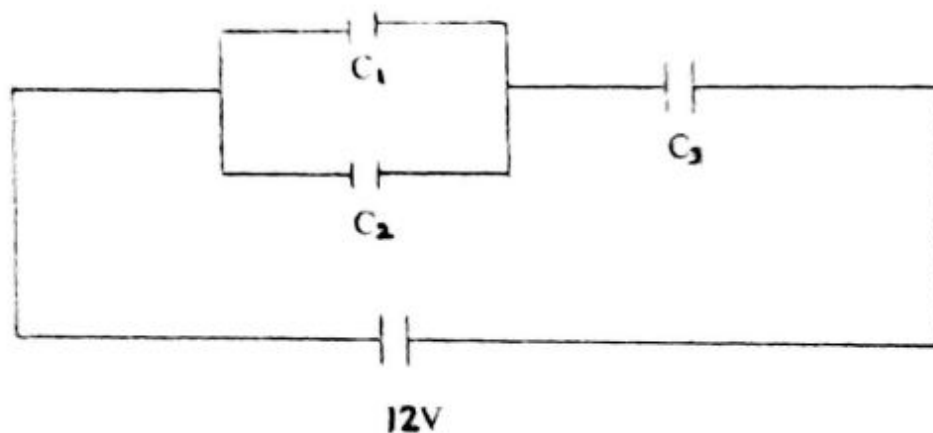
3. (a) (i) State hookes law   (1mk)

    (ii) Can you use rubber band instead of steel spring in a scale to measure weight. Explain   (2mks)

    (b) A certain spring has unstretched length of 35cm when 10kg mass is attached from the spring its length becomes 50cm

    (i) Determine the spring constant   (3mks)

    (ii) The spring is pulled in opposite directions by its ends by two people each with a force of 120N. Find the length of the spring in this situation.   (3mks)

    (iii) Calculate the elastic potential energy gained by the spring in (ii) above   (3mks)

4. A balloon of volume 200cm^3 is filled with helium of density 0.18kgm^{3}. If the mass of fabric of the balloon is 12kg, calculate

    (a) Mass of helium gas that is in the balloon   (1mk)

    (b) Total mass of the balloon floating in air   (1mk)

(c) Mass of air displaced by the balloon (1mk)

(d) The maximum extract weight to be lifted by balloon (3mks)

5. (a) Distinguish between elastic and inelastic collision (1mk)

(b) A ball A of mass 0.2kg moving with a velocity of 6m/s collides directly with ball B of mass 0.3kg at rest and rebounced with velocity of 1.2m/s in the opposite direction after collision. Determine the velocity of B after collision (3mks)

(c) A stone is projected vertically upwards with a velocity of 15m/s. Determine the time taken to reach the maximum height. (2mks)