THE PRESIDENT'S OFFICE
FORM TWO PHYSICS S04
MARKING GUIDE

1.

I	ii	iii	iv	v	vi	vii	viii	ix	x
B	B	D	B	C	D	D	D	A	A

10 marks

2.

COLUMN A	A	B	C	D	E
COLUMN B	II	V	IV	VIII	VII

5marks

3. a) i) Weight $1\frac{1}{2}$ **mark**

ii) Tension $1\frac{1}{2}$ **mark**

b)   i) Weight is the force acting on a body due to gravity $2\frac{1}{2}$ **marks**

ii) Tension is the force transmitted through a rope, string or wire when pulled by forces acting

from opposite $2\frac{1}{2}$ **marks**

c)   Tension = Weight = 20N   **02 Marks**

4.   a) Pascal principal's state that'' Any external pressure applied to the surface of an enclosed
liquid will be transmitted equally throughout the liquid

b) Pressure in liquid is uniformly disturbed equally throughout the liquid

c) When force is applied on the brake pedal, it exerts pressure on the master cylinder. Then this
pressure is transmitted by the brake fluid to the slave cylinders which cause the pistons of the
slave cylinders to open the brake shoe and hence the brake lining pressure. The rotation of
the wheel is then resisted and when the force on the brake pedal is withdrawn the return
spring pulls back the brake shoe which pushes the slave cylinders piston back

5.   a) Elastic potential energy   **2 marks**

b) There is no work done   **1 mark**

Because there is no distance moved by the patient (load) as she was sent to hospital. For
the work to be done there must be distance moved by the load in the direction of force

3 marks

c)   From P.E = mhg

        P.E = 02* 20* 10* = 40J

            Change in P.E = 30j = 10j

       Also P.E = mgh

         10=0.2*10*h

     h= 5m   **4 marks**

6.   a) Static electricity is the study of charges at rest or stationery charges WHILE current electricity

    is the study of charges in motion   **3 marks**

    ii)   - By friction or rubbing: when two object rub each other the one which his outer most

       shell weak bond will lose and the one have sparsely electrons gain the electrons

                1 mark

     - By contact method. When charged and uncharged body contact the charge always

      move from charged body to another   **1 mark**

    -      By induction. This occur when two bodies charged and uncharged keep near.

      Charged object cause the other to gain opposite charges to the one of the charging

      body   **1 mark**

   b) The reason is the movement of vehicles on road produces electric charges and hence

    sparkling due to the friction of tires on the road is very dangerous since petrol is very

    inflammable, so that metal chains that drag along the road helps in absorbing these

    dangerous electric charges produced by the vehicle tires   **4 marks**

7. a) Mathematics simplifies physics laws **(04 Marks)**

Solution;

$$\theta = (T - 273)^0 C$$

$$= (350 - 273)^0 C$$

= 77^{0}C   **06 marks**

8.   **@2.5 Marks**

(a)   (i) When the rod is pushed in, both the flannel and polythene rod is neutral thus there is
          no deflection of the electroscope. When the rod is Pilled, the flannel loses electrons
          which are polythene becoming charged. Therefore, the leaves of electroscope diverge
       (ii) The rod and the flannel have to be dry so that they cannot shed (lose)Their charges
          in air. Thus making them retain their charge and make the Charging faster and
          easier.

(b)   (i) The leaf of the electroscope will diverge. This is because the rod is negatively
          charged and the colorimeter hence making the leaf to diverge.
       (ii) The ball is neutral, so when the rod is brought near it, it will attract the
          Positive charges of the ball making the ball to be attracted but after,
          The charges will be in neutralized making the ball to be repelled away.

9. a) It is advised to connect bulbs in parallel during electrical installation so that when one bulb
    blow out or disconnected other bulbs will keep working.   **04 marks**

   b) Force = rate of change of momentum

   $$= \frac{Change\ of\ momentum}{Time\ of\ impact} = \frac{1\ x\ 5 - (-1\ x\ 1)}{0.002}N$$ **02 marks**

   (-1 X 1) Because the sphere rebounds in the opposite direction and momentum
   is a vector quantity

   Force $= \frac{5+1}{0.002} = \frac{6}{0.002} = 3000N$ **04 marks**

10   a) Being a simple loop circuit, the current is the same at all points.
           Therefore, the reading of ammeter Q is 3A
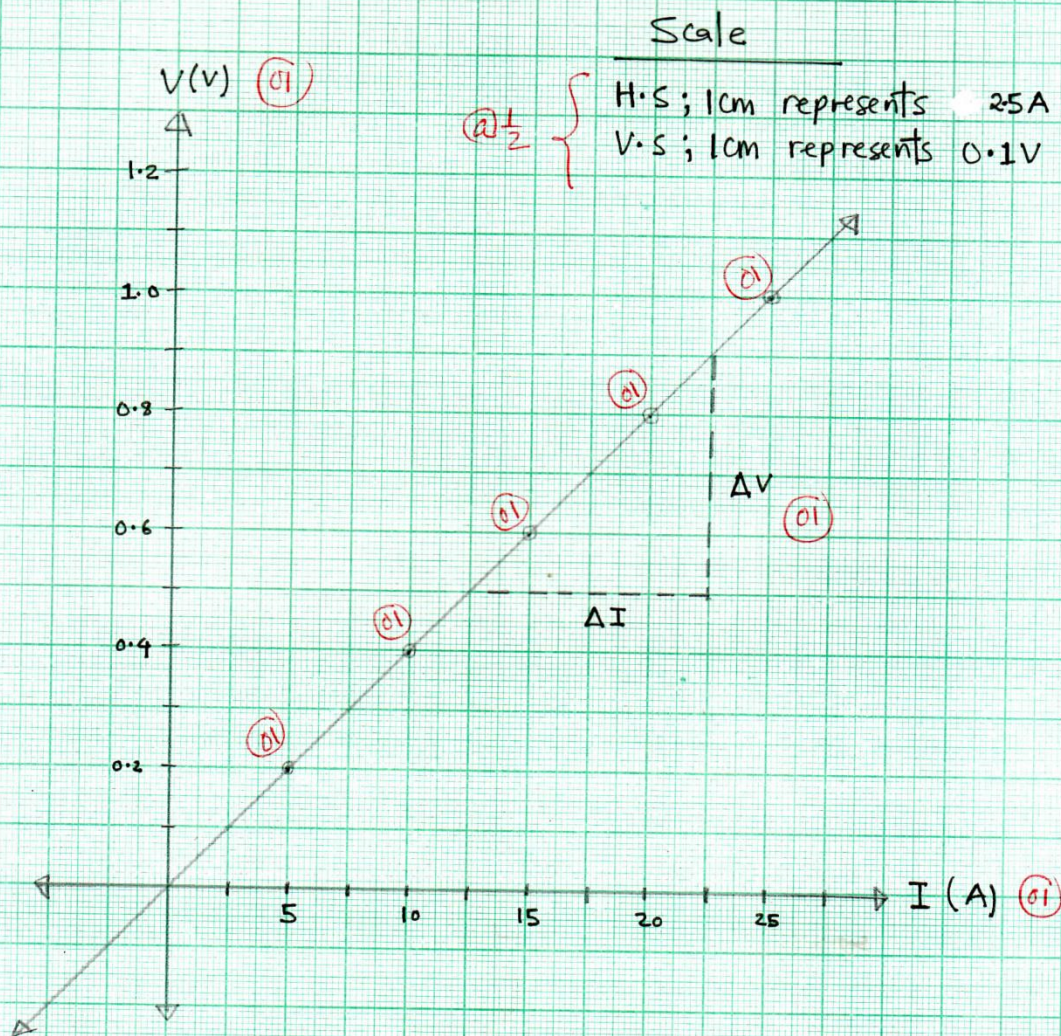   Sum of p.d in external circuit = p.d across battery
           3V + p = 13V
           P = 10V
           Therefore, the reading of voltmeter P is 10V   **03 marks**

10 (b) i)

<u>A GRAPH OF V(v) AGAINST I (A)</u> 01 mark

Scale

H·S ; 1cm represents 25A
V·S ; 1cm represents 0·1V

ii) Slope (s) = $\dfrac{\Delta V}{\Delta T}$ 01½

$= \dfrac{0.9 - 0.5}{22.5 - 12.5}$

$= 0.85 \text{ V/A}$

Slope = Resistance = $0.85 \ \Omega$ 01½

(1cm x 1cm) squares of (10mm x 10mm)