**ST JOSEPH OF NAZARETH HIGH SCHOOL**

**S.6 INTERNAL-MOCK EXAMINATIONS 2017**

**PRACTICAL PHYSICS PAPER (P510/3)**

**Time allowed: 3hours 15 minutes**

**Instructions:**

**Attempt question 1 and one other question**

1. **In this experiment, you will determine Young’s modulus for a metre rule using two methods.**

**Method I**

*G-clamp* *Metre rule* X *Metre rule*

*Pointer*





Table/ desk 100 g

Figure 1.0

(a) Measure and record the breadth b and thickness d of the metre rule labeled X.

(b) Clamp the metre rule X on the table with length = 0.900 m free. Attach a pointer

at the free end of the metre rule as shown in figure 1.0

(c) Suspend a mass of 0.100 kg at a distance 2.0 cm from the free end of metre rule

X.

(d) Determine the depression  in metres of X.

(e) Repeat procedures (b) to (d) for values of = 0.800, 0.700, 0.600, 0.500, 0.400

and 0.300 m.

(f) Tabulate your results including values of  and .

(g) Plot a graph of  against .

(h) Read and record the intercept c, on the vertical axis.

(i) Calculate Young’s Modulus from the expression,



Where 

**Method II**

(a) Using the arrangement of figure 1.0 above, adjust the length  to 0.900 m.

(b) Set the metre rule into vertical vibration.

(c) Measure the time t for 20 oscillations.

(d) Calculate the period T.

(e) Calculate Young’s modulus,  from the expression 

**2. In this experiment, you will determine the refractive index , of the material of glass prism provided.**

AB

s

E

P1M

P2  P3

G

P4

F C

Figure 2.0

(a) Fix a plain sheet of paper on a soft board.

(b) Place the glass prism with its triangular section facing upwards on the sheet of

paper.

(c) Trace the outline of the prism as shown in figure 2.0.

(d) Remove the glass prism.

(e) Measure and record the length, of AB in cm.

(f) Mark a point E on AC a distance 1.0 cm from A.

(g) Draw a line EF perpendicular to AC.

(h) Draw a line EG making an angle = 150 to EF.

(i) Fix two pins P1 and P2 on EG.

(j) Replace the glass prism on its outline.

(k) While looking through face BC of the prism, fix two pins P3 and P4 so that they

appear to be in line with images of P1 and P2.

(l) Remove the glass prism.

(m) Draw a line through P3 and P4 to meet the line BC at M.

(n) Measure length s, of BC in cm.

(o) Repeat procedures (h) to (n) for values of  = 200, 250, 300 and 400.

(p) Enter your results in a suitable table including values of  and

 where  and .

(q) Plot a graph of  against .

(r) Find the slope p, of the graph.

(s) Calculate the refractive index, of the material of the prism from the equation:



**HAND IN YOUR TRACING PAPER**

**3. In this experiment, you will determine the potential difference per unit length, of the wire labeled P by two methods.**

**Method I**

K1 C1

A  D B

Cello tape Wire, P Cello tape

C2

Figure 3.0

(a) Connect the circuit as shown in figure 3.0

(b) Close switch .

(c) Adjust the position of the sliding contact D, until the galvanometer shows no

deflection.

(d) Measure and record the balance length  in metres.

(e) Open switch 

(f) Calculate, from**:**

**.**

(g) Disconnect cell C2 from the circuit.

**Method II**

K1 C1

A **** D B

Sliding contact Cello tape

Cello tape Wire, P

5Ω

X Y

K2 C2  Wire Q

Figure 3.1

(a) Connect the circuit shown in figure 3.1 such that AB = 1.00 m.

(b) Close switch, keeping switch, open.

(c) Adjust the position of the crocodile clip along wire XY until the reading on the

ammeter = 0.08 A.

(d) Close switch , keeping  closed and adjust the position of the sliding

contact D, along wire AB until the galvanometer shows no deflection.

(e) Measure and record the balance length **,** in metres**.**

(f) Open switches and.

(g) Repeat procedures (b) to (f) for  = 0.10, 0.12, 0.14, 0.16 and 0.18 A

(h) Tabulate your results.

(i) Plot a graph of  against **.**

(j) Determine the slope , of your graph**.**

(k) Calculate the value of  from:

.

**END**

***S.6 practical physics paper 3- Internal-mock exams 2017***

***Apparatus required***

***Question 1***

*2 metre rules, 1 retort stand with clamp, 1 100g slotted mass, 1 G – clamp, 1 pointer, 1 piece of masking tape about 10cm, 1 stop clock/stop watch.*

***Question 2***

*1 right angled prism, 1 white plain sheet of paper, 4 drawing pins, 4 optical pins, 1 soft board.*

***Question 3***

*2 dry cells (1.5V each) labeled C1, 1 double cell holder, 1 switch labeled K1, 4 pieces of cello tape each about 5cm long, 1 dry cell (1.5V) labeled C2, 1 single cell holder, 1 centre-zero galvanometer, 1 jockey, 1 bare constantan wire (SWG 28) of length 102cm labeled P, 1 standard resistor of 5Ω, 1 bare constantan wire (SWG 30)*