**ST JOSEPH OF NAZARETH HIGH SCHOOL**

**S.6 PRE-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 the acceleration due to gravity****, by two methods.**

**Method I**

(a) Tie the pendulum bob at the end of the long piece of thread provided.

(b) Suspend the pendulum bob as shown in figure 1.0 by clamping the end of the

thread using two small pieces of wooden blocks, such that length  = 0.900 m.

*Pieces of wooden*

*blocks*

 *Thread* *Stand*

*Bob*

Figure 1.0

(c) Displace the bob slightly and release it to oscillate.

(d) Measure and record the time t for 20 oscillations.

(e) Calculate the period T.

(f) Find the acceleration, due to gravity from.

(g) Dismantle the apparatus.

**Method II**

(a) Clamp the metre rule horizontally so that the scale faces you.

(b) Make a loop at the end of a long piece of thread.

(c) Slide the metre rule through the loop and tighten the loop.

(d)Tie the free end of the thread on the metre rule such that the length of the thread

between the two loops is 1.00 m.

(e) Tie the pendulum bob at the end of the short piece of thread.

(f) Suspend the pendulum bob from the midpoint of the looping thread such that the

length  is 0.200 m as shown in figure 1.1



h

 *Short piece of thread*

*Pendulum bob*

Figure 1.1

(g) Adjust the two loops to the 0.400 m and 0.600 m marks on the metre rule.

(h) Read the distance , between the two marks.

(i) Measure and record the height h, in metres.

(j) Displace the bob slightly towards you and release it to oscillate.

(k) Measure and record the time t for 20 oscillations.

(l) Determine the period T.

(m) Adjust the distance d to 0.300 m by moving each loop towards the end of the

metre rule.

(n) Repeat procedures (i) to (l) for values of  0.400, 0.500, 0.600, and 0.700 m.

(o) Tabulate your results including values of T2.

(p) Plot a graph of T2 against h.

(q) Find the slope, of the graph.

(r) Calculate the acceleration **,**due to gravity from

.

1. **In this experiment, you will determine the focal length of a convex lens using two methods.**

**Method I**

Image Lens Plane mirror

Mounted pin



Figure 2.0

(a) Arrange the mounted pin, converging lens and the plane mirror as shown in

figure 2.0.

(b) Adjust the position of the pin until its image appears to coincide with it.

(c) Measure and record distance, between the lens and the pin.

**Method II**

Second position First position

Screen

Wire gauze

K







Figure 2.1

(a) Connect the torch bulb in series with dry cells and switch k.

(b) Set up the arrangement shown in figure 2.1

(c) Adjust the position of the lens such that distance  40.0 cm.

(d) Adjust the position of the screen until a clear image of the gauze is obtained on it.

(e) Measure and record distance, between the two screens.

(f) Without changing the position of the screens, displace the lens so that another

clear image of the wire gauze is formed on the screen.

(g) Measure and record distance between the two positions of the lens.

(h) Repeat procedures (c) to (g) for values of  50.0, 60.0, 65.0, 70.0 and

80.0 cm.

(i) Tabulate your results including values of and .

(j) Plot a graph of  against .

(k) Read and record the intercepts  on the vertical axis and  on the horizontal

axis.

(l) Calculate  from the expression:

.

1. **In this experiment, you will determine the resistivity****, of the material of the wire labeled W**
2. Measure and record the diameter  of the wire W.

D K1

A  J B

Slide wire

E

Figure 3.0

(b) Connect the circuit shown in figure 3.0.

(c) Close switch .

(d) Move the sliding contact J, along the slide wire AB until a point is reached where

the galvanometer G shows no deflection.

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

(f) Open switch .

(g) Disconnect the cell E.

D K1



A J B

Slide wire potentiometer

 Bare wire W

P Q

Cello tape Cello tape

K2

E

Figure 3.1

(h) Connect the circuit shown in figure 3.1 starting with  = 0.200 m.

(i) Close switches  and  and move the sliding contact J, along AB until a point

is reached at which the galvanometer G shows no deflection.

(j) Measure and record the balance length .

(k) Open switches  and.

(l) Repeat procedures (h) to (k) for values of  = 0.300, 0.400, 0.500, 0.600 and

0.700 m.

(m) Tabulate your results.

(n) Disconnect the circuit in figure 3.1 and connect the circuit in figure 3.2.

Bare wire, W

P Q

Cello tape Cello tape

K2

E

Figure 3.2

(o) Close switch.

(p) Read and record the current  in the circuit.

(q) Disconnect the circuit in figure 3.2

(r) Connect the voltmeter across cell E and note the reading  on it.

(s)Plot a graph of  against.

(t) Find the slope  of the graph.

(u) Calculate the value of  from the expression



(v) Calculate the resistivity**,** of the material of the wire from the

Expression .

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

***Apparatus required***

***Question 1***

*1 pendulum bob, 1 piece of thread about 1 m, 1 retort stand with a clamp, 2 pieces of wooden blocks each approximately 5cm x 2cm x1cm, 1 stop clock, 1 short piece of thread about 30 cm, 1 metre rule.*

***Question 2***

*1 convex lens (f = 15.0cm) in a holder, 1 screen with wire gauze, 1 metre rule, 1 torch bulb, 2 dry cells in a holder, 3 pieces of connecting wire, 1 switch, 1 white*

*screen, 1 plane mirror in a holder, 1 optical pin in a holder****.***

***Question 3***

*1 centre-zero galvanometer, 2 dry cells (each 1.5V) labeled D, 1 dry cell (1.5V) labeled E, 1 jockey, 2 switches, one labeled K1 and the other K2, 1 double cell holder, 1 single cell holder, 1 potentiometer slide wire, 8 pieces of connecting wires, 2 pieces of cello tape, 1 SWG 30 constantan wire 1.60m long labeled W, 1 metre rule.*