MINEDUC
MUSANZE DISTRICT ADVANCED LEVEL EXAMINATION/ 2nd TERM/2024
DISTRICT COMPREHENSIVE ASSESSMENT, 2023-2024

SUBJECT: PRACTICAL PHYSICS/20marks

S5 COMBINATIONS:

PHYSICS-CHEMISTRY-MATHEMATICS	**(PCM)**
MATH-PHYSICS-COMPUTER-SCIENCE	**(MPC)**
PHYSICS-CHEMISTRY-BIOLOGY	**(PCB)**
MATH-PHYSICS-GEOGRAPHY	**(MPG)**
PHYSICS-ECONOMICS-MATHEMATICS	**(PEM)**

Duration:1h30

INSTRUCTIONS:

Do not open this question paper until you are told to do so.
This paper consists of **one** compulsory question **(20marks)**
You may use a non-programmable calculator, geometric set and a ruler 30cm long.
Use only a **blue** or **black** pen and **pencil**.

A student investigates the period of a pendulum. **Fig. 1.1** and Fig. **1.2** show the arrangement.

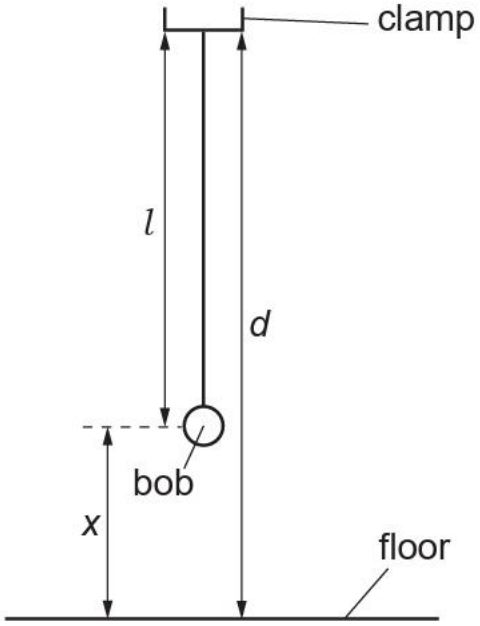


Fig. 1.1

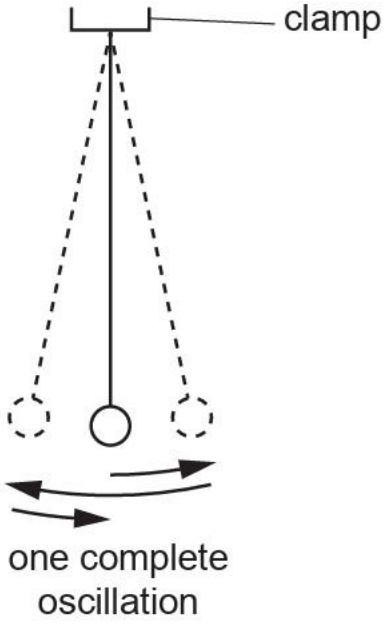


Fig. 1.2

a.The student measures the distance d between the bottom of the clamp and the floor and obtains d = 120.0cm. This distance d remains constant throughout the experiment.

The student adjusts the length l of the pendulum to 70.0 cm.

Calculate the distance x between the centre of the pendulum bob and the floor. Record the value of x in the first row of **Table 1.1**. **(1.5marks)**

(b) The student displaces the bob slightly and releases it so that it swings. **Fig. 1.2** shows one complete oscillation of the pendulum.

The student measures, and records in the first row of **Table 1.1**, the time t for 10 complete oscillations.

(i) Calculate, and record in the first row of **Table 1.1**, the period T of the pendulum. **(1.5marks)**

ii.Calculate, and record in the first row of **Table 1.1**, T^2. **(3marks)**

iii.Complete the column headings in **Table 1.1**. **(4marks)**

Table 1.1

x/	t/	T/	T^2/
	16.7		
45.0	17.3	1.73	2.99
40.0	17.9	1.79	3.20
35.0	18.4	1.84	3.39
30.0	19.0	1.90	3.61

(c) The student repeats the procedure using x = 45.0 cm, 40.0 cm, 35.0 cm and 30.0 cm. The student records the readings in **Table 1.1**.

Plot a graph of T^2 (y-axis) against x (x-axis). You do not need to start your axes at the origin (0,0) **(6marks)**

(d) State whether the graph line shows that T^2 is proportional to x. Give a reason for your answer. **(2.5marks)**

(e) Explain why timing 10 oscillations gives a more accurate result for the period T than timing one oscillation **(1.5marks)**

END