# FBISE PRACTICAL BASED ASSESMENT (PBA)
# PHYSICS HSSC-I

**Guidelines/instructions for teachers/paper setters:**

i. There will be two Sections in PBA paper. In Section-A there will be one question having parts in it. Similarly, in Section-B there will be one question having parts in it.

ii. In Section-A, Question No. 1 will be based only on one experiment taken from Part-I of the list of practicals.

iii. In Section-B, Question No. 2 will be based on multiple experiments taken from Part-II of the list of practicals.

iv. Ratio of Part-I practicals is 60% while ratio of Part-II practicals is 40% in the PBA paper.

v. Draw diagram(s) if asked for.

vi. In the new pattern of practicals i.e. Practical Based Assessment (PBA), there will be no marks for practical note books and viva voce. However, students may record procedures, observations, apparatus and calculation etc on any type of plain papers/work sheets / practical folder for their future memory of all aspects of practical performance in order to attempt the PBA Examination amicably.

vii. It may be noted that performance of all the prescribed practicals is mandatory in the laboratories during the whole academic year and only those students will be able to attempt the PBA who will have performed the practicals in the laboratories as per requirement of each practical.

## LIST OF PHYSICS PRACTICALS HSSC-I

### Part-I (60% of practical marks --- 9 Marks)

1. Measure the diameters of a few ball bearings of different sizes using Screw Gauge andestimate their volumes. Mention the uncertainty in each result.
2. Determine the radius of curvature of convex lens and a concave lens using aspherometer.
3. Determine the weight of a body by vector addition of forces.
4. Verify the two conditions of equilibrium using a suspended meter rod.
5. Investigate the value of 'g' by free fall method using electronic timer.
6. Verify that the time period of the simple pendulum is directly proportional to the square root of its length and hence find the value of 'g' from the graph.

### Part-II (40% of practical marks ----- 6 Marks)

1. Determine the moment of inertia of a fly wheel.
2. Determine the acceleration due to gravity by oscillating mass-spring system.
3. Determination of frequency of A.C by Melde's apparatus / electric sonometer.
4. Investigation of the laws of vibration of stretched strings by sonometer or electromagneticmethod.
5. Determine the wavelength of sound in air using stationary waves and to calculate thespeed of sound using resonance tube.
6. Measure the mechanical equivalent of heat by electric method.

# FEDERAL BOARD OF INTERMEDIATE AND SECONDARY EDUCATION ISLAMABAD

## Subject: PHYSICS HSSC-I
## Paper: Practical Based Assessment (PBA)

**Total Marks: 15** **Time: 60 minutes**

Roll Number

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | |
| 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 |
| 2 | 2 | 2 | 2 | 2 | 2 | 2 |
| 3 | 3 | 3 | 3 | 3 | 3 | 3 |
| 4 | 4 | 4 | 4 | 4 | 4 | 4 |
| 5 | 5 | 5 | 5 | 5 | 5 | 5 |
| 6 | 6 | 6 | 6 | 6 | 6 | 6 |
| 7 | 7 | 7 | 7 | 7 | 7 | 7 |
| 8 | 8 | 8 | 8 | 8 | 8 | 8 |
| 9 | 9 | 9 | 9 | 9 | 9 | 9 |

Name of Examination: _____

Centre Code: _____

Date: _____

Sig. of Dy. Supdt. _____

**Instructions for students:**

1. Carefully read all the questions and then answer them at the specified spaces.
2. Use black or blue ball point.
3. Marks are mentioned against all questions in the brackets [ ].
4. Students may use the last page for rough work (if required).
5. Answer the questions as per given instructions.

**MODEL PAPER HSSC-I PHYSICS**

**Note: Attempt all questions and answer the questions within the provided spaces.**

## SECTION-A

**Q 1:** A student is finding the weight of a metre rule using the apparatus shown in Figure 1.

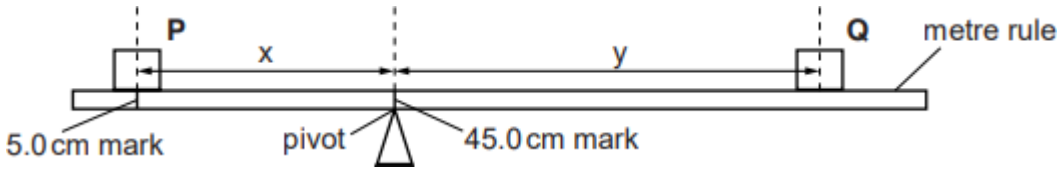



**Figure 1 (not to scale)**

- He places the load P = 1.00 N on the metre rule at the **5.0 cm** mark.
- He places the metre rule on the pivot at the **45.0 cm** mark.
- He places load Q = 0.80 N on the rule and adjusts its position so that the metre rule is as near as possible to being balanced.

He measures

- the distance x (between the centre of load P and the pivot)
- the distance y (between the centre of load Q to the pivot)

He repeats the procedure, placing the load P at the **10.0 cm** mark, at the **15.0 cm** mark, at the **20.0 cm** mark and at the **25.0 cm** mark. The readings are shown in Table.

**Table 1**

| x (____) | y (____) | A = P x (____) | B = Q y (____) |
|---|---|---|---|
| 40.0 | 42.5 | | |
| 35.0 | 36.0 | | |
| 30.0 | 30.0 | | |
| 25.0 | 24.0 | | |
| 20.0 | 17.5 | | |

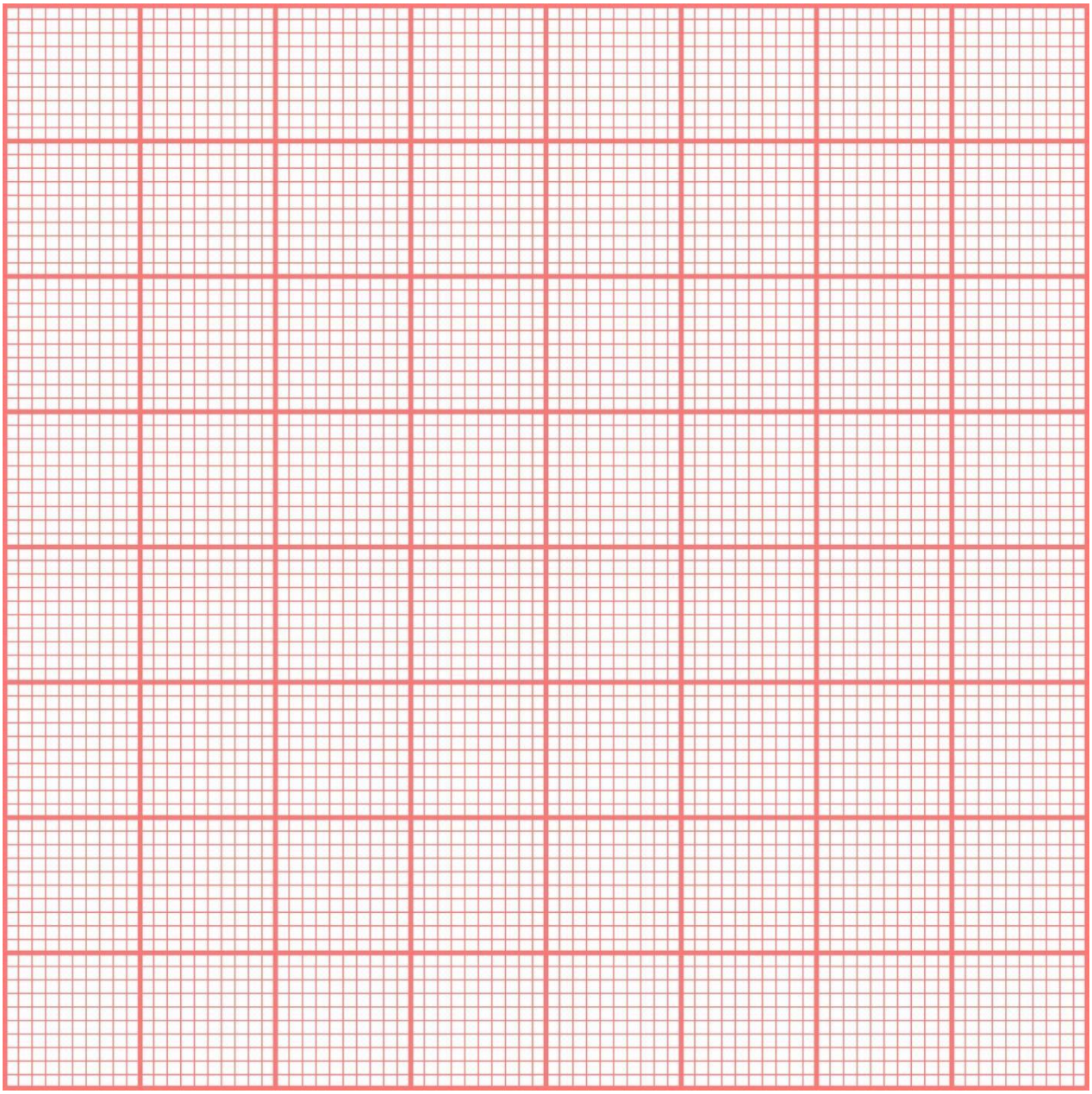
(i) In the table 1:

(a) Complete the column **headings and units**. [1 ]

(b) Complete the column **A = P x**. [1]

(c) Complete the column **B = Q y**. [1]

(ii) Plot a graph of A (y-axis) against B (x-axis). Start both axes at the origin (0,0). [1 ]



(iii) Using the graph, determine the vertical intercept Y (the value of A, when B = 0 N cm). Show clearly this value on the graph.

Y =_____ [1]

(iv) Calculate the weight W of the metre rule using the equation W = Y/z , where z = 5.0 cm.

W =_____ [1]

(v) Suggest one practical reason why it is difficult to obtain exact results with this experiment. [1]

_____

_____

(vi) The student uses an accurate electronic balance to obtain a second value for the weight of the metre rule.

weight obtained on the balance = 1.24 N

State and justify whether the two values for the weight agree within the limits of experimental accuracy.

Statement [1 ]

_____

_____

Justification [1 ]

_____

_____

**SEECTION-B**

**Q 2:** A student is carrying out an experiment to determine the time period of mass-attached to aspring using the setup as shown in the figure 2.

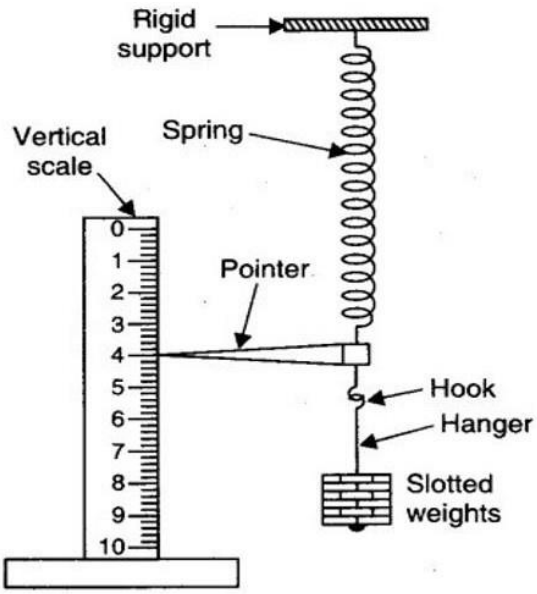



**Figure 2**

He adjusted the position of pointer at **0.0 cm** when there is no load suspended with the spring. When a 100 g mass is suspended with the spring, then the new position is shown in the figure.

(i) What is the value of force that 100 g of mass exerts on the spring? [1 ]

Force =_____N

(ii) What is the extension in the spring? [1]

Extension =_____cm

(iii) What is the value of spring constant k? [1 ]

k = _____

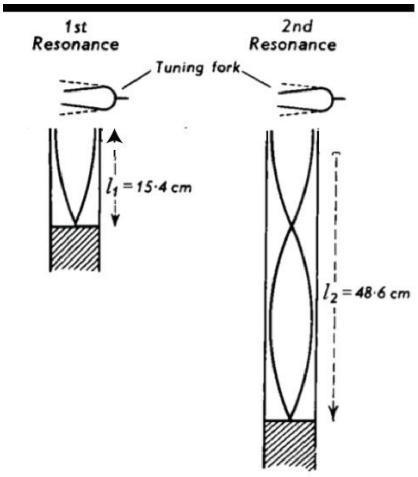
(iv) Write down formula to calculate frequency of A.C by using Melde's experiment? [1]

_____

(v) Why is mass concentration greater at rim of flywheel? [1]

_____

(vi) Calculate the wavelength of sound waves using resonance positions (as shown in the figure) for calculation of speed of sound experiment (ignore the end correction). [1]

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# ROUGH WORK