GREENLAWNS HIGH SCHOOL

PHYSICS PRACTICAL PRELIMINARY EXAMINATION 2023-24

STD. 10 **TIME: 1 HR.**

DATE: 18/12/2023 **MARKS: 20**

NOTE:

The first 10 minutes have to be spent in reading this paper, planning your work and checking the quality of your apparatus. The one hour at the head of these 10 minutes has to be spent to perform your practical.

Writing work has to be done in the following order- Aim, Observation, Calculations (if any) and Conclusion. Do not copy the apparatus and procedure.

EXPERIMENT *[15]*

Aim: To calculate the relative density of a given body by using the principle of moments.

Apparatus: A metre rule, retort stand, beaker with water, given object

Procedure:

PART 1- Weight of an object in air.

1) Carefully balance the metre rule on the knife edge of the retort stand to determine the rule's centre of gravity. Record it as 'a'cm

2) Hang the test object from a point which is at a distance of 10 cm to the left side of the centre of gravity (i.e. between 0 to 'a'cm). Note this point as the point of load 'b'cm. Thus the length of load arm = a – b cm

3) Suspend a weight of 50 gf (effort 'E') from a suitable point on the metre rule (i.e. between 'a' cm and 100 cm) so that the rule is balanced. This point is 'c' cm (point of balance of effort). Thus the length of the effort arm = c – a cm

4) Calculate the load by using the principle of moments. The load is the weight of the test object in air.

5) Repeat the above steps by keeping the object at a distance of 20 cm on the left side of the centre of gravity. Calculate the load (weight of object in air).

6) Find the average of the two readings to get the weight of the object in air.

PART 2 – Weight of an object in water.

7) Hang the test object from a point which is at a distance of 10 cm to the left side of the centre of gravity (i.e. between 0 to 'a'cm), which is the same as before but let the object be completely immersed in water. Note this point as the point of load 'b'cm. Thus the length of load arm = a – b cm

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8) Suspend a weight of 50 gf (effort 'E') from a suitable point on the metre rule (i.e. between 'a' cm and 100 cm) so that the rule is balanced. This point is 'c' cm (point of balance of effort). Thus the length of the effort arm = c – a cm
9) Calculate the load in water by using the principle of moments. The load is the weight of the test object in water.
10) Repeat the above steps by keeping the object at a distance of 20 cm on the left side of the centre of gravity but keeping the object immersed in the beaker containing water. Calculate the load (weight of object in water).
11) Find the average of the two readings to get the weight of the object in water.
12) Calculate the weight loss of an object.
13) Calculate the relative density of an object by finding the ratio of its weight in air to weight loss in water.
14) Write your observations & calculations as follows:

OBSERVATIONS AND CALCULATIONS:

Part 1 Weight in air

Sr. No.	Centre of gravity 'a'cm	Point of load 'b' cm	Load arm a-b cm	Effort 'E'gf	Point of balance of Effort 'c'cm	Effort arm c – a cm	Load in air 'L' gf
1.							
2.							

Part 2 Weight in water

Sr. No.	Centre of gravity 'a'cm	Point of load 'b' cm	Load arm a-b cm	Effort 'E'gf	Point of balance of Effort 'c'cm	Effort arm c – a cm	Load in water 'L' gf
1.							
2.							

Part 3 Weight loss in water (Calculate)
Part 4 Relative density of an object (Calculate)

15) Write your conclusion.