

AN ROINN OIDEACHAIS

(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1926.

HONOURS

PHYSICS.

WEDNESDAY, 23rd JUNE.—MORNING, 10 A.M. TO 12 NOON.

[Not more than *six* questions are to be attempted.]

1. A glass mirror is one inch thick. Show that the image seen in it is not at the same distance behind the reflecting surface as the object is in front. Give some estimate of the difference between these distances when the line of vision is nearly normal to the mirror.

2. Show how real magnified images may be obtained:—

(a) by a concave mirror;

(b) by a lens.

In practice what factors limit the effective magnification?

A small object is placed 18 inches in front of a convex lens of 12 inches focal length. Compare sizes of image and object.

3. When a white object is looked at through a triangular glass prism why do fringes of colour appear, always graded in the same order?

What is meant by the angle of minimum deviation?

4. A body weighing 3 lbs. is placed on a plane inclined at 30° to the horizontal and the coefficient of friction between the body and the plane is $\cdot 5$. What is the resultant force acting on the body parallel to the plane? What will be its velocity after slipping one foot down the plane having started from rest?

5. Two men jump from the second storey of a burning building. One falls into a sheet held by the rescue party, the other on a projecting ledge on the same level as the sheet. Discuss the probable consequences, with reasons, in the light of your knowledge of mechanics. What data would be necessary to determine the kinetic energy of one of the men when half way down?

6. State the principles of the "Conservation of Energy" and the "Conservation of Momentum."

"The principle of the 'Conservation of Energy' is not capable of universal application in everyday problems in Mechanics, whereas the principle of the 'Conservation of Momentum' can always be applied." Explain this statement.

7. Make a sketch which will show the horizontal field of magnetic force about a bar magnet placed horizontally with its north-seeking pole pointing south. Mark the regions where the magnet's field neutralises that of the earth.

8. How would you detect:—

- (a) the presence of an electrical charge and its nature?
- (b) the presence of a flow of electricity and its direction?

9. Compare the characteristics of primary and secondary cells and state some of the uses of each.

10. You are given a Wheatstone bridge and asked to determine the resistance of a length of wire. What other apparatus would you require in order to obtain an accurate result and how would you perform the experiment? Explain the principle involved.