

AN ROINN OIDEACHAIS
(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS
(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1929.

PASS

PHYSICS.

THURSDAY, 20th JUNE.—MORNING, 10 A.M. TO 12 NOON.

Not more than *six* questions may be attempted.

All questions are of equal values.

1. Describe in detail how the intensity of a given source of light is measured? Discuss the unit used. Draw diagrams to illustrate the truth of the "Law of inverse squares."

2. What is meant by the optical image of an object? Draw diagrams to shew how a concave spherical mirror may form (a) an enlarged erect image, (b) an enlarged inverted image of an object. Which of these images could you show on a screen? Give reasons for your answers.

3. Why does water always appear to be shallower than it is? Draw a diagram explanatory of the fact that an object, so placed on the bottom of a dry basin that it is obscured by the side of the basin from the sight of an observer, may be brought into his field of vision by pouring water into the basin.

4. Explain with diagrams how the combined effect of two coplanar forces acting on a body can be arrived at (a) when the forces are not acting in parallel directions; (b) when they are. How would you demonstrate either (a) or (b) practically?

5. If s is the distance travelled by a body in time t , and if the body has an initial velocity u , a final velocity v , and a constant acceleration f , state formulæ connecting

1. u , v , f and t .

2. u , v , f and s .

Describe an experiment either with Atwood's machine or with a Fletcher trolley to test the truth of one of your formulæ, assuming u to be zero.

6. What do you understand by the terms "Work," "Energy" and "Power"?

A ball, weighing $5\frac{1}{2}$ oz., falls from a height of 50 ft. What is (a) its total energy and (b) its kinetic energy, when it is 5 feet from the ground? It is caught at this moment by a player who stops it while his hands move downwards through a distance of two feet. What is the average resistance exerted by his hands?

7. Given an insulated conductor and a gold leaf electroscope, how would you determine (a) whether or no the conductor is charged with electricity, (b) if it is charged, what is the nature of the charge? Give reasons for your answer.

8. Mention some useful purposes to which permanent magnets may be applied. From what metal should they be made? How would you make one? Give reasons.

9. How would you produce an electric current by chemical action? If you were given an electric battery with unmarked terminals, how would you determine which of them was positive? Give reasons for your answer.

10. Describe Wheatstone's Bridge. How would you use it to compare the resistances of two pieces of wire? Explain your method, using diagrams.