

AN ROINN OIDEACHAIS  
(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS  
(Secondary Education Branch).

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LEAVING CERTIFICATE EXAMINATION, 1935.

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LOWER COURSE.

PHYSICS.

SATURDAY, 22nd JUNE. —AFTERNOON, 1.30 TO 3.30 P.M.

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Not more than *six* questions may be attempted.

All questions are of equal value.

1. State the laws of reflection of light. Draw a diagram showing how the image of an object is seen in a plane mirror, and prove that the image is as far behind the mirror as the object is in front of it.

2. Draw diagrams showing how (a) a real enlarged image; (b) a real diminished image, and (c) a virtual image can be formed by a concave mirror. Find the position and size of the image of an object 1 cm. in height, which is placed at a distance of 20 cms. from a concave mirror of focal length 30 cms.

3. Upon what does the colour of transparent and opaque objects depend? How is it that two objects that match in colour by artificial light may appear to differ by daylight?

4. Describe how the velocity of light has been determined. State its value.

5. Explain the terms acceleration and force. The muzzle velocity of a projectile of mass 100 lbs. is 2,200 ft. per sec. If this velocity is imparted to the projectile in .006 second, calculate the average acceleration and the force acting on the projectile.

6. Show how the velocity of a moving body at successive intervals may be represented graphically. Apply the method to the case of a body moving in a straight line with uniform acceleration, and deduce the relation  $s=ut + \frac{1}{2}ft^2$ ,  $s$  being the space passed over in time  $t$ , the initial velocity being  $u$  and the acceleration  $f$ .

7. Explain the terms work and power. A lift weighing 2 tons is raised 80 feet in 2 minutes. Calculate the work done and the horse-power required.

1 H.P. = 550 foot-lb. per sec.

8. Give a short account of the more important properties of a magnet. Illustrate your answer by describing three experiments you have performed with a magnet.

9. Explain the terms electric charge and electric potential. Describe some form of electrical condenser. Explain what is meant by the capacity of a condenser and point out the factors on which it depends.

10. What are the principal effects of an electric current? Describe briefly three experiments you would make to demonstrate them.

11. State Ohm's Law. What is the resistance of a 200 volt 30 watt lamp? Find the effective resistance of three such lamps joined (a) in series, and (b) in parallel.

12. Describe as fully as you can any one of the following types of cell (a) Daniell; (b) Leclanché; (c) lead-storage. Explain the actions taking place in the cell when current is being delivered by the cell.