AN ROINN OIDEACHAIS

(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1926.

MATHEMATICS.

ARITHMETIC—Paper B.

FRIDAY, 18th JUNE.—MORNING, 10.30 A.M. TO 12 NOON.

Five questions may be answered.

The questions at the end of the paper carry somewhat higher marks than the others.

Logarithms may not be used in questions 1 to 5 inclusive.

Tables of Measures, Constants and Formulae, and Logarithm Tables may be obtained from the Superintendent.

1. Find correct to three significant figures the value of:

$$3^6\left(\frac{18\times 16\times 14}{1\times 2\times 3}\right)-3^7\left(\frac{18\times 16}{1\times 2}\right)+3^8\left(\frac{18}{1}\right)-3^9.$$

2. Calculate to five decimal places the value of:

$$\frac{\sqrt{2}-1}{\sqrt{2}+1}$$

3. Telegraph poles along a railway are 60 yards apart: find (*a*) the shortest distance between two poles which are an exact number of miles apart, (*b*) the speed in miles per hour of an engine which passes 12 poles in 25 seconds.

4. A "yard" measure is found to be 0·42 inch short: find (*i*) the percentage error in areas calculated from results obtained by using this measure, (*ii*) a factor, correct to four significant figures, for converting into acres areas calculated in square "yards" from measurements taken with the aid of the above "yard" measure.

5. A cubic inch of a certain wood weighs $5\frac{5}{9}$ drams: a piece measuring $4\frac{1}{16}$ in. long, $2\frac{1}{5}$ in. broad, and 1 in. thick, was cut into matches 2 in. long and $\frac{1}{10}$ in. thick both ways; the waste and sawdust weighed $9\frac{4}{7}\frac{7}{2}$ drams: how many matches were made?

6. A sum of money amounts to £725 in 3 years and to £785 in 5 years at compound interest. In what time will it amount to £1,000?

7. Cloth is purchased in France for Dublin at the rate of 17·35 francs per metre. Transit charges amount to 0·78 francs per metre and there is a duty of 15 per cent. on the Invoiced price (transit charges excluded). At what price per yard must it be sold to yield a profit of 20 per cent., the rate of exchange being $123\frac{3}{4}$ francs to the £?

8. A person had a fortune left him and invested $\frac{1}{3}$ of it at 5 per cent., $\frac{1}{4}$ of it at $4\frac{1}{2}$ per cent., and the remainder at 4 per cent. At the end of three months it had amounted to £7,280 5*s*. How much was his original fortune?