

# AN ROINN OIDEACHAIS

(Department of Education).

## BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

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### LEAVING CERTIFICATE EXAMINATION, 1927.

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#### MATHEMATICS.

##### ARITHMETIC—Paper B.

MONDAY, 20th JUNE.—MORNING, 10.30 A.M. TO 12 NOON.

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Five questions may be answered.

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

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

1. Explain the meaning and origin of the term "proper fraction." What do you know about the result of multiplying together an indefinitely large number of proper fractions? Give reasons.

Evaluate to seven decimal places :

$$\left( \frac{1}{5} + \frac{1}{10} + \frac{1}{50} - \frac{1}{600} - \frac{1}{42000} \right) \text{ of } 3.1415926.$$

2. Find, by logarithms, the value of

$$\frac{2.7896 \times \sqrt[4]{.89341}}{(.07648)^{\frac{1}{2}}}.$$

Marks will be deducted for every false *statement* in the setting out of the work.

3. The velocity of light is 186,330 miles per second, and the distance of the sun 92,900,000 miles: find, to the nearest second, how long light takes to travel from the sun to the earth.

Express in powers of 10 to the first significant figure the distance in miles of a star whose light takes 2000 years to reach the earth.

4. A sovereign weighs 7.998 grams and is  $\frac{11}{12}$  pure gold. A 20-franc gold piece weighs 6.452 grams and is  $\frac{9}{10}$  pure gold. Neglecting the value of the other metals in each coin, find, to the nearest centime, the number of francs which would be equivalent to £1 and, to the nearest farthing, the exchange value of a 20-franc gold piece.

5. An increase of the tax on a certain article from 5d. to 8d. per lb. was expected to reduce the consumption by 15 per cent. but to bring in £630,000 more revenue. What was the revenue from this source before the increase?

6. A man borrows £1,000 at 6 per cent. compound interest, the whole to be repaid in three equal annual instalments, the first payment falling due one year from the date of the loan: find, to the nearest penny, the amount of each payment.

7. The shares of a Company are of £5 of which £2 are paid-up and the dividend (on the paid-up capital) is 18 per cent. per annum. Find what price per £5 share an investor should pay so as to have  $5\frac{1}{2}$  per cent. per annum on his investment, and the alteration in his annual income if he sells out at  $65\frac{5}{8}$  £2,400  $2\frac{3}{4}$  per cent. Land Stock, and reinvests the proceeds in the Company at  $6\frac{7}{8}$  per share.

8. A tent,  $11\frac{3}{4}$  feet in diameter and  $13\frac{3}{8}$  ft. in height is in the form of a cylinder surmounted by a cone, the height of the cylindrical portion being 8 ft. 6 ins. Find (a) the number of yards of canvas 39 inches wide required to make the tent and (b) its cost at 3s. 2d. per yard, allowing 10 per cent. extra for overlapping.