AN ROINN OIDEACHAIS

(Department of Education).

BRAINSE AN MHEÁN-OIDEACHAIS

(Secondary Education Branch).

INTERMEDIATE CERTIFICATE EXAMINATION, 1928.

MATHEMATICS.

ARITHMETIC—Paper B.

FRIDAY, 15*th JUNE*.—MORNING, 10.30 A.M. TO 12 NOON.

Five questions may be answered.

Mathematical Tables may be obtained from the Superintendent.

1. Find to *four* significant figures the best approximation to $\sqrt{307}$. Calculate to *two* significant figures the percentage by which the square of this approximation differs from 307. (Logarithms may not be used). [29 marks].

2. Show, as simply as possible, whether the following statements are correct or not, giving reasons :—

(*a*) $3 \cdot 285 \div 0 \cdot 973 = 3 \cdot 276.$

(*b*) $\sqrt{0 \cdot 9604} = 0 \cdot 3100.$

(*c*) $31419 \times 72635 = 228197197.$

(*d*) $\log (\cdot 0546)^2 = \bar{1} \cdot 7372 \times 2 = \bar{1} \cdot 4744.$

(The mark awarded will depend on shortness and intelligence). [29 marks.]

3. A sum of £368 15s. 7d. borrowed on March 10th, 1926, at $5\frac{1}{2}$ per cent. per annum, simple interest, was repaid when principal and interest amounted to £390 18s. 11d. : find the date of repayment.

(If a formula be used it must be proved). [29 marks.]

4. By selling an article for £1 18s. 4d. a shopkeeper would gain 15 per cent.: find the percentage profit or loss if the selling price were (i) £1 8s. 4d.; (ii) £2 8s.

If the shopkeeper allowed (to the nearest penny) 5 per cent. discount off the marked price on cash sales, what was the marked price of the article sold for £1 18s. 4d. cash?

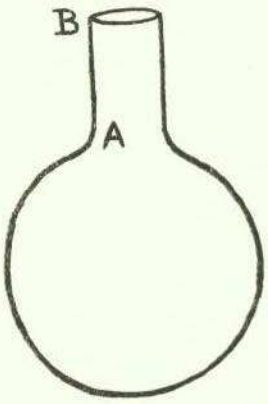
[29 marks.]

5. A merchant in Dublin owes a debt of 2,300 pesetas to one in Madrid: find what he gains or loses by sending the money to him through France instead of paying it direct, the exchange being £1=124 francs, 13 francs=3 pesetas, £1=28·5 pesetas. [29 marks.]

6. After deduction of expenses amounting to $12\frac{1}{2}$ per cent. of his property a man divided the surplus thus: $\frac{1}{2}$ to his elder daughter, $\frac{1}{3}$ to his younger daughter and $\frac{1}{10}$ to a charity; a servant is to receive $\frac{2}{3}$ of the remainder, the elder daughter then receiving what is over. If the elder daughter receives altogether £1769 8s. 11d., find the value of the property.

[32 marks.]

7. A thin flask is shown in the figure and consists of a sphere and a cylinder. Filled to the shoulder A it holds 118·6 c. cms. and filled to the brim B it holds 142·5 c. cms. If AB is $\frac{3}{4}$ of the diameter of the bulb, find the internal diameters of bulb and neck. (See formulae at the end of the book of Mathematical Tables).



[35 marks.]

8. Calculate to the nearest penny the difference between the simple interest at 4 per cent. and the compound interest at $3\frac{1}{2}$ per cent. for 3 years on £378 17s. 5d.

(Any formula used should be proved). [35 marks.]