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BRAINSE AN MHEÁN-OIDEACHAIS
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INTERMEDIATE CERTIFICATE EXAMINATION, 1928.

MATHEMATICS.

ARITHMETIC—Paper B.

FRIDAY, 15th 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) \( 3.285 \div 0.973 = 3.276 \).
   (b) \( \sqrt{0.9604} = 0.3100 \).
   (c) \( 31419 \times 72835 = 228197197 \).
   (d) \( \log (0.0456)^2 = 1.7372 \times 2 = 1.4744 \).

(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\( \frac{3}{4} \) 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?

[20 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 12½ per cent. of his property a man divided the surplus thus: ¼ to his elder daughter, ¼ to his younger daughter and ¼ to a charity; a servant is to receive ¼ 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 ½ 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 3½ per cent. for 3 years on £378 17s. 5d.

(Any formula used should be proved.)

[35 marks.]