AN ROINN OIDEACHAIS M.37.

LEAVING CERTIFICATE EXAMINATION, 1963.

MATHEMATICS—ARITHMETIC.

THURSDAY, 6th JUNE.-Morning, 10 to 12.

All questions to be answered.

Mathematical Tables may be obtained from the Superintendent.

1. Half-crowns to the value of £716,500 and shillings to the value of £516,000 were in circulation in Ireland in 1959. Express the difference between the number of half-crowns and the number of shillings as a percentage of the total number of these coins.

If the total number of shillings and half-crowns is one-tenth of the number of pennies in circulation, calculate the value of the pennies, correct to the nearest pound.

(28 marks.)

2. A dealer purchases goods at the rate of 2·6 German marks per kilogram and sells them at £15 10s. per cwt. Find his percentage profit, correct to two significant figures.

(See Tables, p. 33. Take £1 = 11·2 German marks.)

(28 marks.)

3. A person holds £2,000 of 3% stock. When its value is 90 he sells and invests £1,000 of the proceeds in 5% stock at 125. At what rate per cent of interest must he invest the remainder of his money if his income is to remain unchanged ?

(28 marks.)

4. Three men A, B, C, form a business partnership, contributing £5,000, £3,000 and £2,500, respectively, to the capital. They agreed that, after allowing one-eighth of the profits to C as manager, the remainder should be divided amongst them in proportion to their capital contributions. At the end of the year C received £280. What were the total profits and how much did A and B receive ?

(28 marks.)

5. Evaluate each of the following, correct to three significant figures:-

(i) $\frac{1}{\sqrt[3]{6}}$, (ii) $(1{\cdot}764)^{2{\cdot}35}$.

(28 marks.)

6. (i) Show that after 15 years at 5% per annum compound interest a sum of money will more than double itself.

(ii) Find the least number of years in which a sum of money will more than treble itself at 5% per annum compound interest.

(30 marks.)

7. An inscribed sphere touches the base and curved surface of a right circular cone whose perpendicular height is 4 inches. If the volumes of the cone and sphere are in the ratio 8 : 3, calculate the diameter of the base of the cone.

(30 marks.)