AN ROINN OIDEACHAIS
(Department of Education).

BRAINNSE AN MHEADHON-OIDEACHAIS
(Secondary Education Branch).

LEAVING CERTIFICATE EXAMINATION, 1938.

MATHEMATICS.

ARITHMETIC.

MONDAY, 20th JUNE—MORNING, 10 a.m. to 12 NOON.

Six questions may be answered.

Mathematical Tables may be obtained from the Superintendent.

1. 3 tons 17 cwt. at £4 10s. per ton and 5 tons 8 cwt. at £5 5s. per ton: find, to the nearest penny, the average price per ton of the whole lot.

[30 marks.]

2. A man bought three kinds of tea, A, B, C, as follows:—

A: 35 lb. at 3s. 6d. per lb.,

B: 40 lb. at 4s. 6d. per lb.,

C: 30 lb. at 3s. 4d. per lb.

He sold the whole lot, making thereby a profit of 20% and 12½% respectively on A and B and losing 15% on C. Find, correct to *two* significant figures, his percentage profit on the tea.

[30 marks.]

3. The difference between the Simple Interest and the Compound Interest on a certain sum of money for 2 years at 4% per annum is £1 8s. Find the Principal.

[30 marks.]

4. One railway journey of 327 miles cost £2 18s. 6d, and another of 745 kilometres cost 427 francs. Determine by what percentage the higher charge per mile exceeds the lower.

[See Tables, page 33; £1 = 147 francs.]

[30 marks.]

5. A man sold his holding of £10,500 of $2\frac{1}{2}\%$ Stock at 74 and invested the proceeds in 4% Stock at 105: find the increase in his annual income resulting therefrom.

[30 marks.]

6. Using the Tables evaluate

(*a*) $(2{\cdot}74)^{3{\cdot}6}$; (*b*) $\sqrt[5]{0{\cdot}3748}$: (*c*) $(0{\cdot}4973)^{-2{\cdot}8}$

[35 marks.]

7. Two clerks, A, B, began work on the same day, A on a salary scale of £130 for the first year and annual increments of £15, B on an initial salary of £100 per annum and annual increments equivalent in any year to $12\frac{1}{2}\%$ of his salary for the previous year. Find the difference between the salaries of A and B in the 5th year and show that B's salary was higher than A's in the 9th year.

[35 marks.]

8. Find the area of the regular octagon formed by cutting off the corners of a square whose side is 10 inches in length.

If A, B, C are successive corners of the regular octagon prove that $AB : AC = 1 : \sqrt{2+\sqrt{2}}$.

[35 marks.]

9. A solid is composed of an equilateral cone and a hemisphere on opposite sides of a common base. The radius of the base is one foot: calculate the volume of the solid.

[35 marks.]