

AN ROINN OIDEACHAIS

(Department of Education)

LEAVING CERTIFICATE EXAMINATION, 1959.

MATHEMATICS—ARITHMETIC.

TUESDAY, 2nd JUNE.—MORNING, 10 TO 12.

All questions to be answered.

Mathematical Tables may be obtained from the Superintendent.

1. Find, correct to three significant figures, the value of:—
 $23.7423 \times (0.92718)^2 \div \sqrt{0.87643}$ [28 marks.]

2. A circle, A, is inscribed in a square and another circle, B, is circumscribed about the square. (i) Express the area of A as a fraction of the area of the square, and (ii) express the area of the square as a fraction of the area of B.

If the area of B exceeds the area of the square by 6 square inches, find the area of A.

[Take $\pi = 3\frac{1}{7}$.]

[28 marks.]

3. A man's telephone bill was calculated as follows:—he was charged 2d. for each local call and 1s. 6d. for each trunk call that he made, together with a fixed charge of £1 17s. 6d.

- (i) If his total bill was £2 18s. 8d. and he made only three trunk calls, how many local calls did he make?
(ii) If his total bill was £3 8s. 6d. and he made ninety calls altogether, how many trunk calls and how many local calls did he make?

[28 marks.]

4. (i) Potatoes are bought at £35 a ton and sold at 5d. a lb. Find the percentage profit.

(ii) Calculate the income obtained by investing £2,550 in $4\frac{1}{2}\%$ Stock at 85.

A man invested a certain sum of money in $4\frac{1}{2}\%$ Stock at 85. Another man invested the same amount in 5s. shares costing 6s. 8d. each: a dividend of 8% was paid on the shares and his income was £45 greater than that of the first man. Find the sum of money they invested.

[28 marks.]

5. Find, correct to the nearest pound, the sum of money that would amount to £500 in 2 years at 6% per annum compound interest.

Under the terms of an insurance policy a man is to be paid £500 each year for three years, the first £500 to be paid two years hence. Find the present worth of the policy correct to the nearest pound, compound interest being reckoned at 6% per annum.

[28 marks.]

6. The volume of a sphere A is 20 cubic inches: find its surface area correct to the nearest square inch.

What is the surface area of a sphere whose radius is double the radius of A?

A globe of radius 30 inches is used to represent the earth, taking the earth to be a sphere of radius 4,000 miles. If the area of Ireland is 32,000 square miles, find in square inches the area representing Ireland on the globe.

[30 marks.]

7. Two metals X and Y weigh respectively 10 grams and 3.75 grams per cubic centimetre. Find the weight of one cubic centimetre of

(a) an alloy of X and Y which contains 40% by volume of X;

(b) an alloy of X and Y which contains 70% by weight of X.

[30 marks.]