

# AN ROINN OIDEACHAIS

(Department of Education).

INTERMEDIATE CERTIFICATE EXAMINATION, 1953.

## MATHEMATICS (Arithmetic).

TUESDAY, 9th JUNE.—MORNING, 10 TO 12.

All questions to be answered.

Mathematical Tables may be obtained from the Superintendent.

1. Find the cost of 19 tons 9 cwts. 2 qrs. at £8 13s. 6d. per ton, giving your answer correct to the nearest penny.

[25 marks.]

2. Simplify:—

$$\frac{3\frac{1}{5} - 2\frac{3}{4}}{1\frac{2}{5} + 2\frac{1}{3}} \div \frac{2\frac{1}{4} \times 1\frac{2}{3} - 3\frac{5}{7}}{1\frac{5}{7} \div \frac{9}{11} - \frac{1\frac{3}{4}}{14}}$$

[25 marks.]

3. Find, correct to the nearest penny, the compound interest on £785 for three years at 4% per annum.

[30 marks.]

4. Find, correct to two significant figures, the value of

$$987.5 \times (0.1654)^2 \div \sqrt{5.067}.$$

[30 marks.]

5. A cylindrical pipe, 15 feet long, has an external diameter of 2.15 in. and an internal diameter of 1.85 in. and is made of lead. Find the volume of the lead, correct to the nearest cubic inch.

How many of these pipes could be made from a ton of lead and what weight of lead, to the nearest pound, would be left over? [See Tables, p. 33]

[30 marks.]

6. When the price of cigarettes was increased from 1s. 8d. to 2s. 4d. per twenty, a man reduced his consumption by 25%. Find the percentage increase or decrease in his expenditure on cigarettes.

By what percentage should he have reduced his consumption of cigarettes so that his expenditure would have remained unchanged?

[30 marks.]

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7. The distance from Dublin to Naas is twenty miles. A cyclist leaves Dublin at 12 noon and cycles to Naas and back at a uniform rate of 12 miles per hour. A motorist who leaves Dublin for Naas at 12.45 p.m. by the same route travels at a uniform rate of 30 miles per hour. He stops for five minutes in Naas and sets out for Dublin at the same rate as before until he reaches a point half way to Dublin, where he stops to execute some repairs. He resumes his journey at a reduced rate of 20 miles per hour and reaches Dublin at the same time as the cyclist.

Represent these journeys graphically and use your graphs to find, as accurately as you can,

- (a) how long the motorist stops at the point half way between Naas and Dublin ;
- (b) the time at which the motorist overtakes the cyclist ;
- (c) the time at which the cyclist overtakes the motorist ;
- (d) the times at which the motorist and cyclist are five miles apart.

[30 marks.]