

# AN ROINN OIDEACHAIS

(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1948.

## MATHEMATICS (Arithmetic).

TUESDAY, 15th JUNE.—MORNING, 10 TO 12.

The total number of questions answered should not exceed *six*.

Mathematical Tables may be obtained from the Superintendent.

1. Find, correct to the nearest penny, the cost of 38 tons, 14 cwts. 3 qrs. at £6 15s. 9d. per ton.

[30 marks.]

2. Simplify the expression

$$\frac{8\frac{1}{4} + \frac{5}{8} \times 2\frac{1}{8}}{(\frac{5}{8} + 1\frac{7}{80}) \div (3\frac{1}{8} - 1\frac{1}{5})}$$

and then find the value of its square root, correct to two places of decimals.

[30 marks.]

3. An agent buys a number of cars at a certain price per car. On some he makes a profit of  $37\frac{1}{2}\%$  by selling them at a gain of £150 each. What percentage profit does he make on the remainder by selling them at £500 each?

If the number of cars which he sells at a profit of  $37\frac{1}{2}\%$  is twice the number he sells at £500 each, what is his percentage profit on the whole lot?

[30 marks.]

4. Find, to the nearest penny, the compound interest on £867 15s. 0d. for three years at  $2\frac{1}{2}\%$  per annum.

[30 marks.]

5. Use the Tables to find the value of

$$\{5.83 \times (1.025)^3 \times 0.0436\} \div \sqrt[3]{234.7}$$

[35 marks.]

6. Two motorists, A and B, leave Cork for Dublin at 11 a.m. and 12 noon, respectively, and travel by the same route, A at a speed of 36 miles per hour and B at a speed of 40 miles per hour. When A is 24 miles from Cork he has a breakdown which delays him 30 minutes, and he then proceeds at a speed of 25 miles per hour. Find by means of a graph

- (i) how far B is from Cork when he overtakes A,
  - (ii) at what time he overtakes A,
  - (iii) how far B is from Cork when he is 12 miles ahead of A.
- [35 marks.]

7. It takes 29,768 gallons of water to fill a cylindrical tank whose internal diameter is 20 feet 4 inches. Calculate the internal height of the tank, giving your answer to the nearest inch.

Or

Find, in inches, correct to one decimal place, the radius of a circle which is equal in area to a square whose diagonal is 15 centimetres long.

[35 marks.]

8. Two metals, A and B, weigh 8.4 gms. and 2.9 gms. per cubic centimetre, respectively. An alloy made of these metals contains 42% by *weight* of A. Find the weight of one cubic centimetre of the alloy.

Find (a) the volume of A and (b) the weight of B in 55 cubic centimetres of another alloy of these metals, if one cubic centimetre of this alloy weighs 6.2 gms.

[35 marks.]