

AN ROINN OIDEACHAIS
(Department of Education.)

INTERMEDIATE CERTIFICATE EXAMINATION, 1942.

MATHEMATICS (Arithmetic).

TUESDAY, 16th JUNE—MORNING, 10 A.M. TO 12 NOON.

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

Mathematical Tables may be obtained from the Superintendent.

1. Find the cost of 3 cwts. 16 lbs. at 3s. 6½d. per lb.

How much is 6½ per cent. of the cost ?

[30 marks.]

2. Simplify

$$\frac{0.357 \times 32.75 \times 0.792}{14.41 \times 43.2 \times 0.0119}$$

[30 marks.]

3. If the speed of light is 299,796 kilometres per second, find, to the nearest second, the time it takes light to reach the earth from the sun, a distance of 92,500,000 miles. [1 kilometre=0.6214 mile.]

[30 marks.]

4. Find the compound interest on £100 for 3 years at 5 per cent. per annum.

What sum will amount to £810 6s. 9d. in three years at 5 per cent. per annum compound interest ?

[30 marks.]

5. Two articles were sold by a retailer at £15 and £20 respectively. He had bought them at prices which were 25% and 33⅓% respectively less than these prices. Find (i) his percentage profit on each article, (ii) his percentage profit on the whole transaction.

[30 marks.]

6. A wooden box with lid measures 76, 67.5, and 36.5 cms. externally, the wood being 1.85 cms. thick. The weight of the box is 28.9 kilogrammes. Find, to two significant figures, the weight of 1 cubic centimetre of the wood.

[35 marks.]

7. Use logarithms to find the value of:—

(i) $\frac{4}{3}\pi r^3$, when $r=7.09$;

(ii) $\frac{1}{\sqrt{0.37}}$

[35 marks.]

8. A circle of area 10 square inches is divided into three equal parts by two concentric circles. Calculate in inches, to two decimal places, the radii of the three circles.

[35 marks.]

9. On a certain route, 4 miles in length between the termini, there is a five-minute service of buses in both directions. If the buses travel at 12 miles per hour, how many buses are required to maintain the service?

If a man walks at $3\frac{1}{2}$ miles per hour, how many buses will pass him in both directions during a two-mile walk along that route?

[A graphical solution will be accepted.] [35 marks.]