

**AN ROINN OIDEACHAIS**  
(Department of Education).

**BRAINNSE AN MHEADHON-OIDEACHAIS**  
(Secondary Education Branch).

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LEAVING CERTIFICATE EXAMINATION, 1941.

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**MATHEMATICS**

**ARITHMETIC.**

WEDNESDAY, 18th JUNE.—MORNING, 10 A.M. TO  
12 NOON.

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Six questions may be answered.

Mathematical Tables may be obtained from the Superintendent.

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1. Find, to the nearest penny, the cost of 47 tons 18 cwt. 3 qrs. at £37 14s. 6d. per ton.

[30 marks.]

2. If  $\frac{1}{x^3} = \frac{1}{a^3} + \frac{1}{b^3}$ , what is the value of  $x$  when  $a=2.793$ ,  $b=0.348$ ?

Give the result correct to *two* places of decimals.

[30 marks.]

3. A sum of £680 was invested at  $4\frac{1}{2}\%$  per annum, Compound Interest. Find

(i) the Interest accumulated after seven years;

- (ii) after how many years would the accumulated interest for the first time exceed the Principal.

[Tables may be used.]

[30 marks.]

4. A clock was 4 minutes fast at 11 a.m. on March 2nd and it was one minute slow at noon on March 18th. Find

(i) when the clock indicated correct time ;

(ii) what time it indicated at noon, on March 28th.

[30 marks.]

5. A man invested £6,800, partly in 3% Stock at 93½ and partly in 4½% Stock at 102. This gave him a yield of 3¾% on the whole amount invested. How much did he invest in each Stock ?

[30 marks.]

6. A public swimming-bath is 100 feet long and 40 feet wide, while the depth decreases uniformly from 8 feet at one end of the length to 4 feet at the other end. Find how many gallons of water the bath can hold.

If the bath were full and 40,000 gallons of water were then run off how many inches would the surface of the water fall ?

[See Tables, page 33.]

[35 marks.]

7. A man bought 93 sheep at 95s. per head and sold the whole lot for a three-months Bill of Exchange for £390 10s. drawn on April 16th. This he discounted in the Bank on June 4th at 5% per annum. Calculate, to one place of decimals, his percentage profit on the transaction.

[35 marks.]



8. The population of a village in six different years was 3,500, 3,655, 3,830, 4,018, 4,237, and 4,445. A shopkeeper in the village made profits of £154, £168, £184, £201, £221, and £240 in those years. Draw a graph showing the relation of the two sets of figures, and show

- (i) that the profits made were not proportional to the populations ;
- (ii) that the increases of profit were nearly proportional to the increases of population.

What profit might he expect to make when the population was 4,800 ?

[35 marks.]

9. A conical vessel is 12 inches high and the diameter of its base is 10 inches. Find, in simplest form, the ratio of the volume of the vessel to the volume of the largest sphere that will fit in it.

[See Tables, page 33.]

[35 marks.]