

# AN ROINN OIDEACHAIS

(Department of Education).

LEAVING CERTIFICATE EXAMINATION, 1949.

## MATHEMATICS—Arithmetic.

WEDNESDAY, 8th JUNE.—MORNING, 10 TO 12.

Six questions may be answered.

Mathematical Tables may be obtained from the Superintendent.

1. Find the cost of 79 tons 17 cwt. 3 qrs. at £47 18s. 6d. per ton, giving the result correct to the nearest penny.

[30 marks.]

2. If  $e = 1 + \frac{1}{1} + \frac{1}{1 \times 2} + \frac{1}{1 \times 2 \times 3} + \frac{1}{1 \times 2 \times 3 \times 4} + \dots$ , calculate the value of  $e$ , correct to five places of decimals.

Using that result, find the value of  $e^2$ , correct to three places of decimals.

[30 marks.]

3. The edge of a cube is 7.3 ins. long, but, through an error, 7.4 ins. was taken as the length, and then used to calculate the surface area and the volume of the cube. Find, correct to one place of decimals, the percentage errors involved in the length, the area and the volume of the cube.

[30 marks.]

4. A shopkeeper marked his goods 80% above cost price and allowed a certain percentage discount on cash sales. This gave him a net profit of 48½%. Find the rate of discount allowed and the cost price of goods on which he made a profit of £8 9s. 9d. when sold for cash.

[30 marks.]

5. A sum of £1,000 was invested at Compound Interest for a period of four years, the rate being 3% per annum during the first two years, and 4% per annum during the remainder of the period. Find the Compound Interest for the four years.

Show that the Compound Interest would have been the same if the rate had been 4% per annum during the first two years and 3% per annum during the remainder of the period.

[35 marks.]

6. The area of the surface of a sphere is 63.87 square inches. Find the volume of the sphere, correct to the nearest cubic inch.

[35 marks.]

7. Which yields the better dividend,  $3\frac{3}{4}\%$  Stock at  $101\frac{1}{4}$  or  $4\frac{1}{2}\%$  Stock at 108?

A sum of £A was invested in  $3\frac{3}{4}\%$  Stock at  $101\frac{1}{4}$ , and another sum £B was invested in  $4\frac{1}{2}\%$  Stock at 108, and the yearly dividends from those investments respectively were in the ratio of 5:6. If the £A had been invested in  $4\frac{1}{2}\%$  Stock at 108 and the £B invested in  $3\frac{3}{4}\%$  Stock at  $101\frac{1}{4}$ , the sum of the yearly dividends would have been £1 5s. less. Find the value of A and the value of B.

[35 marks.]

8. A vessel 4 ft. high is in the shape of a frustum of a right circular cone. The diameter of the base is 5 feet and the diameter of the top 3 feet. How many gallons of water would the vessel hold?

What would be the depth of the water if the vessel were half-full?

[35 marks.]