

LEAVING CERTIFICATE EXAMINATION, 1965

MATHEMATICS—ARITHMETIC

WEDNESDAY, 16th JUNE—MORNING, 10 to 12

All questions to be answered.

Mathematical Tables may be obtained from the Superintendent.

1. (a) Goods were bought for £300 a ton and sold at 2s. 11d. a lb. Find the percentage profit.
- (b) If petrol costs 5s. 7d. per gallon, find, correct to the nearest £1, the cost of petrol for 9,000 miles at the rate of one gallon for every 37 miles.

(28 marks)

2. Find, correct to three significant figures, the value of:-

$$\frac{48.05 \times \sqrt{0.00709}}{(0.8077)^2}$$

(28 marks)

3. The height of a solid cylinder is twice the length of the diameter of its base and the total surface area of the cylinder is 70 square inches. Find, correct to one place of decimals in each case,

- (i) the volume of the cylinder in cubic inches,
- (ii) the length, in inches, of the diameter of a sphere having the same volume as that of the cylinder.

(28 marks)

4. (a) Find, correct to the nearest pound, the compound interest on £600 for 5 years at 2% per annum.

- (b) Find, as accurately as the Tables allow, the rate of compound interest at which £450 would amount to £570 in 9 years.

(28 marks)

5. A Dublin merchant bought 1,000 litres of wine in France at 12.68 francs per litre. He paid cuscom dues at 5s. 3d. per gallon and the total freight charges were £14. At what price per gallon should the merchant sell the wine so as to make a profit of 4s. 6d. per gallon? Give your answer correct to the nearest shilling.

(£1 = 13.5 francs; 1 gal. = 4.546 litres).

(28 marks)

6. (a) The 2s. 6d. shares of a company are selling at 4s. each. If the company pays a dividend of 5%, how much money should now be invested in the shares to obtain an income of £225?

- (b) A man has £6,000 of 4% Stock. When the price is at 80 he sells his Stock and reinvests one-sixth of the proceeds in 8% Stock at 160. What is the maximum price he can pay for 4½% Stock if he wishes his income to remain unaltered?

(30 marks)

7. A solid piece of iron in the shape of a right circular cone stands upright in a cylindrical vessel of internal diameter 2 feet so that the base of the cone coincides with the base of the cylinder (see diagram).

Water is poured into the vessel until it is 15 inches up the side of the cone and so that 707½ sq. inches of the curved surface of the cone is covered. If the piece of iron is removed from the vessel, find how far the level of the water drops.

(Take  $\pi = 3\frac{1}{7}$ . The area of the curved surface of a right circular cone of radius  $r$  and slant height  $l$  is  $\pi r l$ ).

