

AN ROINN OIDEACHAIS

(Department of Education)

LEAVING CERTIFICATE EXAMINATION, 1961.

MATHEMATICS—ARITHMETIC.

WEDNESDAY, 7th JUNE.—MORNING, 10 TO 12.

All questions to be answered.

Mathematical Tables may be obtained from the Superintendent.

1. (i) Sugar is bought at £56 a ton and sold at $7\frac{1}{2}$ d. a pound. Find the percentage profit.
- (ii) Find the value of $(1.47)^3$ correct to three significant figures.
- (iii) If the average monthly rainfall for eleven months is 3.21 inches and the rainfall in the twelfth month is 3.45 inches, find the average monthly rainfall for the twelve months.

[28 marks.]

2. A sphere has a diameter of 10 ins. Find its surface area and its volume, each correct to three significant figures.

If two spheres are such that the volume of one is 27 times the volume of the other, find the ratio between their surface areas.

[28 marks.]

3. (i) Calculate the income obtained by investing £4,000 in $4\frac{1}{4}\%$ Stock at 80.

(ii) The 5s. shares of a company are selling at 7s. 6d. each. If the company pays a dividend of 6%, how much money must be invested in the shares to obtain an income of £180 ?

[28 marks.]

4. A shopkeeper buys two kinds of tea, one at 5s. per lb. and the other at 6s. per lb., and he mixes them in the ratio of 2 lb. of 5s. tea to 3 lb. of 6s. tea. Find the percentage profit he makes by selling the mixture at 7s. per lb.

In what ratio should he mix the two kinds of tea so as to make a profit of $33\frac{1}{3}\%$ by selling the mixture at 7s. per lb. ?

[28 marks.]

5. Find, correct to the nearest pound, the sum of money that would amount to £580 in one year at 6% interest per annum.

Under the terms of a policy a man is to be paid £580 one year hence and £580 two years hence. Find the present worth of the policy, correct to the nearest pound, compound interest being reckoned at the rate of 6% per annum.

[28 marks.]

6. A right circular cone has a vertical height of 6 inches and the diameter of its base is 10 inches. Find the volume of the cone, correct to the nearest cubic inch.

The cone is cut by a plane parallel to the base. Find the perpendicular height of the frustum so formed if the volume of the frustum is seven-eighths of the volume of the original cone.

[30 marks.]

7. Two men A, B take part in a walking race. A starts at 1 p.m. and walks at a certain speed throughout the race. B starts at 2 p.m. and walks at $6\frac{1}{2}$ m.p.h. throughout. B overtakes A 12 miles from the starting point, and at 5 p.m. A is 5 miles from the finishing point. Find graphically, as accurately as you can,

- (i) A's speed in m.p.h.,
- (ii) the length of the race,
- (iii) how far B is ahead of A when B reaches the finishing point.

[30 marks.]