

AN ROINN OIDEACHAIS

(Department of Education).

LEAVING CERTIFICATE EXAMINATION, 1945.

MATHEMATICS—Arithmetic.

MONDAY, 18th JUNE.—MORNING, 10 TO 12 noon.

Six questions may be answered.

Mathematical Tables may be obtained from the Superintendent.

1. A farmer buys sheep at £6 4s. 9d. each with the money he receives from the sale of 17 bullocks at £22 12s. 6d. each. How many sheep does he get, and how much money has he left over?

[28 marks.]

2. Find, to the nearest penny, the amount of £270 for 3 years at $3\frac{1}{2}\%$ Compound Interest.

Show that the difference between this amount and the amount of £270 for 3 years at $3\frac{1}{2}\%$ Simple Interest, is 3d. to the nearest penny.

[30 marks.]

3. When the tax on a commodity is increased by 10% the consumption falls by 4%, but the tax yields £1260 more than before. Find the total yield of the increased tax.

[30 marks.]

4. A person invests half his savings in a 3% Stock at 91 and the other half in a 4% Stock at 100. Which Stock gives the better dividend?

If his total income, after paying Income Tax at the rate of 7s. 6d. in the pound, is £371 5s., how much has he invested?

[30 marks.]

5. A swimming bath is 120' long, 20' broad and the depth increases uniformly from 4' at one end to 7' at the other. Water is poured at a steady rate into the empty bath so that the bottom is just completely covered after 3 minutes. Find (a) how long more will it take to fill the bath and (b) how many gallons per minute are poured in (to the nearest gallon).

[30 marks.]

6. The driving chain of a free-wheel bicycle engages in two cog-wheels which have 18 and 48 cogs respectively.

If the diameter of the rear wheel of the bicycle is 28", find to the nearest whole number, how often it turned while the bicycle covered a distance of 600 yds. If, in travelling this distance, the cyclist turned the pedals 60 times only, find, to the nearest yard, how far he went without having to pedal.

[35 marks.]

7. A funnel has the shape of a frustum of a cone of vertical height 4" and whose circular ends are of radii 3" and 1" respectively, together with a cylinder of radius 1" and height h ".

If the volume of the frustum is 4 times the volume of the cylinder find h and calculate the area of the curved surface of the funnel to the nearest sq. inch.

[35 marks.]

8. To what degree of accuracy may the following be obtained :—

- (i) The total amount subscribed by 2,957 persons, given that the average subscription of each is, to the nearest penny, £4 11s. 7d. ?
- (ii) The side of a square which shall have the same area as a floor which is 18' 7" by 15' 4", the measurements being taken to the nearest inch ?
- (iii) The compound interest on £1,000 for 20 years at 3% per annum, using the tables you are provided with ?

[35 marks.]

9. Find the H.C.F. of 4883 and 10537.

If the product of these two numbers is increased by 5 times the square of their H.C.F., show that the result is a perfect square.

Prove also that $\frac{13}{10537} - \frac{6}{4883} = \frac{1}{x}$, where x is the L.C.M. of the two numbers 4883 and 10537.

[35 marks.]