MATHEMATICS (Arithmetic)

FRIDAY, 9th JUNE — MORNING, 10 to 12

All questions to be answered

Mathematical Tables may be obtained from the Superintendent.

1. (i) $42\frac{1}{2}$ acres of land were sold for £3,570. Calculate the price per acre.
   (ii) An auctioneer sold a farm for a certain amount of money. An auctioneer's fee
        of one shilling on each £1 of this amount was then added to the amount. If
the total cost to the buyer was £4,830 for what amount did the auctioneer sell the farm ?

(25 marks)

2. A greengrocer bought a quantity of lettuces at 3s. 0d. per dozen, but was able to
sell only $\frac{2}{3}$ of that quantity. With regard to the lettuces sold
      (i) what was the lowest price per lettuce at which he could have sold without
           incurring a loss,
     (ii) if he sold lettuces at 7d. each calculate his percentage profit on the
           transaction,
    (iii) had he reduced the price from 7d. per lettuce to 6d. per lettuce, by what per
           cent would his profit be reduced ?

(25 marks)

3. Two men, O'Brien and O'Neill invested money. O'Neill invested £550 for 2 years at
$2\frac{1}{2}\%$ per annum compound interest, in the Post Office Savings Bank. O'Brien invested £550
for two years in Post Office Savings Certificates at £1 each which paid interest as
follows:

   On completion of the first 12 months on each Certificate 6d. interest was gained.
   On completion of the second 12 months on each Certificate another 6d. interest was
     gained.

   Which man gained the greater interest, and how much more did he gain ?

(30 marks)

4. From the formula $t = \dfrac{(Y - x)\sqrt{n-1}}{s}$ evaluate t correct to two significant figures given

that $Y = 3.35$, $n = 6$, $s = \sqrt{.62}$ and x is the average of the numbers 3.2, 3.6, 4.6, 1.7,
2.4, 3.1.

(30 marks)

5. A salesman has a basic salary of £1,050 per year. In addition to this he is paid
commission at the rate of $2\frac{1}{2}\%$ on all his sales up to a total of £30,000 and 5% commission
on that part of his sales which is in excess of £30,000.
   (i) What is his total salary in a year in which his sales reach £28,000 ?
  (ii) What should his sales be in order that he earn a total salary of £2,000 per
        annum ?

(30 marks)

6. A rectangular solid block of lead 6 in. long, 4 in. wide and 2 in. thick is used to
make cylinders each 0.76 cm. in diameter and 2.54 cm. long.
   (a) Estimate roughly the number of cylinders made, showing the approximations you make.
   (b) Find accurately the number of cylinders made.
                        (Take $\pi = \frac{22}{7}$)

(30 marks)

7. The diagram shows a racing track with sides 300 metres long and with semicircular
ends, the diameter of the semicircle being 100 metres. In a race of 7 circuits of the
track a cyclist completes the first 6 circuits in 8 minutes 16 seconds. In what time
must he travel the final circuit in order to average 40 kilometres per hour for the whole
race ?
                        (Take $\pi = \frac{22}{7}$)

300 m.

100 m.

(30 marks)