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(Department of Education).

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LEAVING CERTIFICATE EXAMINATION, 1940.

MATHEMATICS

ARITHMETIC.

MONDAY, 17*th JUNE*.—MORNING, 10 A.M. TO 12 NOON.

Six questions may be answered.

Mathematical Tables may be obtained from the Superintendent.

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1. Goods weighing 19 tons 17 cwt. 3 qrs. were purchased at £21 per ton and sold at $2\frac{1}{2}$d. per lb. Find

    (i) the total cost price ;

    (ii) the percentage profit.

    [30 marks.]

2. The diameter of a sphere is 5·68 ins. Calculate

    (i) its surface area, correct to the nearest sq. inch ;

    (ii) its volume, correct to the nearest cub. inch.

    [See Tables, page 33.]   [30 marks.]

3. Given one *Hectare*=100 ares, one *are*=100 sq. metres, one *metre*=1·094 yards and one *acre*=4,840 sq. yards, Express a hectare in acres, giving the result correct to *three* significant figures.

    [30 marks.]

4. A sum of money is invested at 5% per annum, Compound Interest. The amount at the end of the third year exceeds the amount at the end of the second year by £44 2s. Find the principal.

[30 marks.]

5. A hound is pursuing a hare which is 120 yards ahead. Supposing that the chase continues in a straight line and that the ratio of the lengths of the bounds of hound and hare are as 5 : 2 and that the hare takes seven bounds for every four taken by the hound, how far will the hound have to run before catching the hare ?

[30 marks.]

6. The value of a machine purchased for £900 deteriorated from year to year at the rate of 15% of its value at the beginning of the year. Using your Tables find

(i) the value of the machine at the end of the 5th year ;

(ii) the age of the machine when its value had fallen to £288.

[35 marks.]

7. Shew that $\frac{1}{100}\left[1+\frac{1}{3}+\frac{1}{30}+\frac{1}{300}\right]$ is very nearly

equal to $\frac{1}{73}$. Make use of this to obtain an approximate

value for $\frac{1}{73} \times 178452$. What is the percentage error

in an answer obtained in this way ?

[35 marks.]

8. On a certain day on the Stock Exchange $3\frac{3}{4}$% Stock was offered for sale at £94½ per £100 Stock and $14\frac{1}{2}$% Shares were on offer at £5¼ per £2 share. Which of those two items offered investors the better dividend at the prices quoted ?

What difference in total annual dividend would it make to a person to invest £1,890 in the higher rather than in the lower dividend-yielding item of the above ?

[35 marks.]

9. The capacity of a conical vessel is $2\frac{1}{2}$ gallons and the ratio of its height to the diameter of its base is as $3 : 2$. Calculate the dimensions of the vessel, correct to $\frac{1}{10}$ inch.

[See Tables, page 33.]   [35 marks.]