AN ROINN OIDEACHAIS.

AN BRAINSE GAIRM-OIDEACHAIS.

CERTIFICATE EXAMINATIONS

for

DAY VOCATIONAL COURSES, 1956.

MATHEMATICS.

Wednesday, 13th June—10 to 1 p.m.

INSTRUCTIONS.

(a) Attempt Question 1 and six others.

(b) The marks allotted to each question are shown in brackets under.

(c) Mathematical Tables are supplied.

(d) Special credit will be given to candidates who display neatness and order in answering.

(e) All the work must be shown in the answer book.

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1. (a) Find the value of $\dfrac{1 \cdot 54 \times 3 \cdot 9}{2 \cdot 6 - 1 \cdot 17}$.

(b) Divide £102 15s. 7d. by 17.

(c) Find the values of x and y which give $\log x = 2 \cdot 8447$ and $\log y = \overline{3} \cdot 2989$.

(d) Calculate the simple interest on £300 for 2 years at 5%.

(e) Express a speed of 30 feet per second in miles per hour.

[20 marks.]

2. A rectangular field has an area of 3 acres and its breadth is 80 yards. Find the perimeter of the field and the length of a diagonal correct to the nearest yard.

[10 marks.]

[P.T.O.

3. A cylinder of internal diameter 16·0 inches contains 15·0 gallons of water. Calculate the height of the water in the cylinder, correct to two significant figures.

[1 cu. ft.=6·25 gall. ; π=3·14).

[10 marks.]

4. A uniform sheet of metal 2·0 metres long and 0·4 metres wide weighs 22·8 kilograms. If the metal weighs 9·5 grams per cubic cm., find the thickness of the sheet in millimetres.

[10 marks.]

5. (a) Find the value of $5x^2-3\sqrt{y}$ when x=4 and y=9.

(b) Solve the equation $\dfrac{x}{3}-\dfrac{5(x-1)}{4}+2=0$.

(c) Find the cost of 3 tons 12 cwt. of coal at £8 15s. per ton.

[12 marks.]

6. Three men, P, Q, R are partners in a business. It is agreed that each man is to receive £600 per annum out of the profits, the rest of the profits to be divided between them in the ratio 2 : 4 : 5. If the total profits in a given year were £2,900, calculate how much each received.

[12 marks.]

7. The cross-section of a solid right prism of height 8 inches is an isocseles right-angled triangle whose equal sides are 2 inches long. Find the volume and total surface area of this prism.

[14 marks.]

8. (a) Draw an isosceles triangle having its vertical angle equal to 40° and the perpendicular from the vertex to the base equal to $1\frac{1}{2}$ inches.

(b) Construct a quadrilateral ABCD having the following dimensions : AB=5·6 cm., BC=2·3 cm., CD=4 cm., DA=3·6 cm., BÂD=30°.

Draw a triangle equal in area to this quadrilateral.

[14 marks.]

9. The relationship between the Centigrade and Fahrenheit scales of temperature is given by the equation $F = \frac{9}{5}C + 32$, where F and C denote the Fahrenheit and Centigrade readings. Make out a table of corresponding values of F and C for values of C from 0 to 70. Plot a graph of F against C and determine, from the graph, the value of C when $F = 86$.

[14 marks.]

10. From a point on the ground 90 feet from the base of a tower the angles of elevation of the top and bottom of a flagstaff, which is fixed vertically on top of the tower, are 48° and 42° respectively. Find the height of the flagstaff and of the tower.

[14 marks.]