

WESTERN AUSTRALIA.

COMMONWEALTH PUBLIC SERVICE.
FOURTH DIVISION.

Examination No. 4460.—8th September, 1956.

FOR APPOINTMENT OR TRANSFER AS TECHNICIAN-
IN-TRAINING, POSTMASTER-GENERAL'S DEPART-
MENT, WESTERN AUSTRALIA.

ELEMENTARY MATHEMATICS.

Time allowed : One and a half hours.

Perusal time : Ten minutes.

Maximum marks 300 ; Pass marks 180.

All questions to be attempted.

Credit will be given not only for correct answers but also for use of short methods and well arranged work.

SECTION A.—ARITHMETIC AND MENSURATION.

1. (a) Find the value of $\frac{.5}{2.5} \times 5 + (2.005 \div .25) - 1.802$.

(b) Subtract the *least* of the following fractions from the *greatest* of them $\frac{25}{32}, \frac{11}{12}, \frac{7}{8}, \frac{17}{20}, \frac{15}{16}$.

—[25 marks.]

2. An overcoat is quoted at £12 10s. but the purchaser gets it for £11 11s. 3d. ; (a) What percentage of discount is allowed ? (b) If the original cost was £10 what actual percentage of profit is made on the transaction.

—[25 marks.]

[TURN OVER.]

3. (a) The perimeter of a rectangular field is 160 chains. If it is 48 chains long, how many acres does it contain ?
- (b) How many squares each with a side of 3 centimetres can be cut from a sheet of tin measuring 1.8 metres by 1.2 metres ?
- [25 marks.]
4. A flat roof measures 44 feet by 28 feet. The rain that falls upon it runs into a cylindrical tank 4 feet 8 inches in diameter and 9 feet deep. How many inches of rainfall will be necessary to fill the tank ?
- [25 marks.]

SECTION B.—ALGEBRA.

5. (a) Find the value of $\frac{(a+b)^2}{(b-c)^2} - \frac{a^2+b^2}{b^2-c^2}$ when $a = 4$,
 $b = 3$, $c = 1$.
- (b) Simplify $(a+b)^2 - 2(a+b)(a-b) + (a-b)^2$.
- [25 marks.]
6. (a) Solve $2x - \frac{5x-4}{6} = 7$.
- (b) Solve $3x + \frac{9y}{2} = 42$.
- $$\frac{3x}{5} + 4y = 27.$$
- [25 marks.]
7. (a) Find the factors of (i) $a^2 - 14a - 72$; (ii) $8x^3 + 27y^3$.
- (b) Simplify $\frac{x^4 - a^4}{(x-a)^2} \div \frac{x(x+a)}{x-a}$.
- [25 marks.]
8. At an election 3,235 persons voted. There were two candidates and the one elected had a majority of 75. How many votes did each get ?
- [25 marks.]

SECTION C.—GEOMETRY.

9. Draw the quadrilateral $HKLM$ in which HK is parallel to ML , $HK = 2$ inches, $KL = 3$ inches, $LM = 4$ inches, angle $HKL = 120^\circ$. What is the particular name given to the figure $HKLM$? Calculate its area. (No description of method is required but all construction lines must be shown.)

—[30 marks.]

10. ABC is a triangle, $AB = AC$ and BC is shorter than AB . D is the point in AB such that CD (when joined) $= BC$.
- Why is angle $ABC = \text{angle } ACB$?
 - Why is angle $BDC = \text{angle } ACB$?
 - Why is angle $BAC = \text{angle } BCD$?

—[35 marks.]

11. Draw two circles each with radius $1\frac{1}{2}$ inches and with their centres O and P $2\frac{1}{2}$ inches apart. Join A to B (the points of intersection of the circumferences). At B draw a line perpendicular to AB cutting the circumferences of circles O and P at C and D . Join CA , DA and PB .
- Why is CA a diameter of the circle O ?
 - Why is $CB = 2\frac{1}{2}$ inches?
 - Measure AB .

No description of construction required.

—[35 marks.]